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# Thinking, Teaching, Learning: Explorations in Primary School Design

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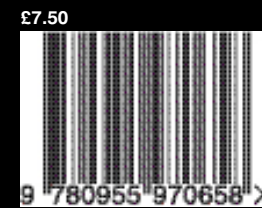




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Thinking, Teaching, Learning Explorations in Primary School Design



## Thinking, Teaching, Learning Explorations in Primary School Design

### Places for learning

This publication has been produced firstly;

- to document architectural design work by a unit of third year architectural students at the University of Edinburgh taught over five successive years (2004-8) and secondly;

- to re-present the work to a wider audience to provide an architectural response to the Scottish Government's educational policy document 'A Curriculum for Excellence'. The designs suggest how the built environment could enable educators to deliver the Curriculum's aims and objectives in a more successful way. The students' work is seen as particularly useful when approaching the question - 'what is a primary school?' as they are less constrained than real building proposals, hold no preconceptions of brief or clients and tap into a freely creative train of thought.

Fiona McLachlan and Rachael Hallett,  
University of Edinburgh



THE UNIVERSITY of EDINBURGH



Credits

Tutors:

**Fiona McLachlan and Rachael Hallett,**  
University of Edinburgh

Contributors and critics:

**Keith Thomson,**  
Edinburgh Council, Children and Families

**Dr Ian Appleton,**  
The Appleton Partnership and Honorary Fellow,  
University of Edinburgh

**Anne Cunningham,**  
Lighthouse

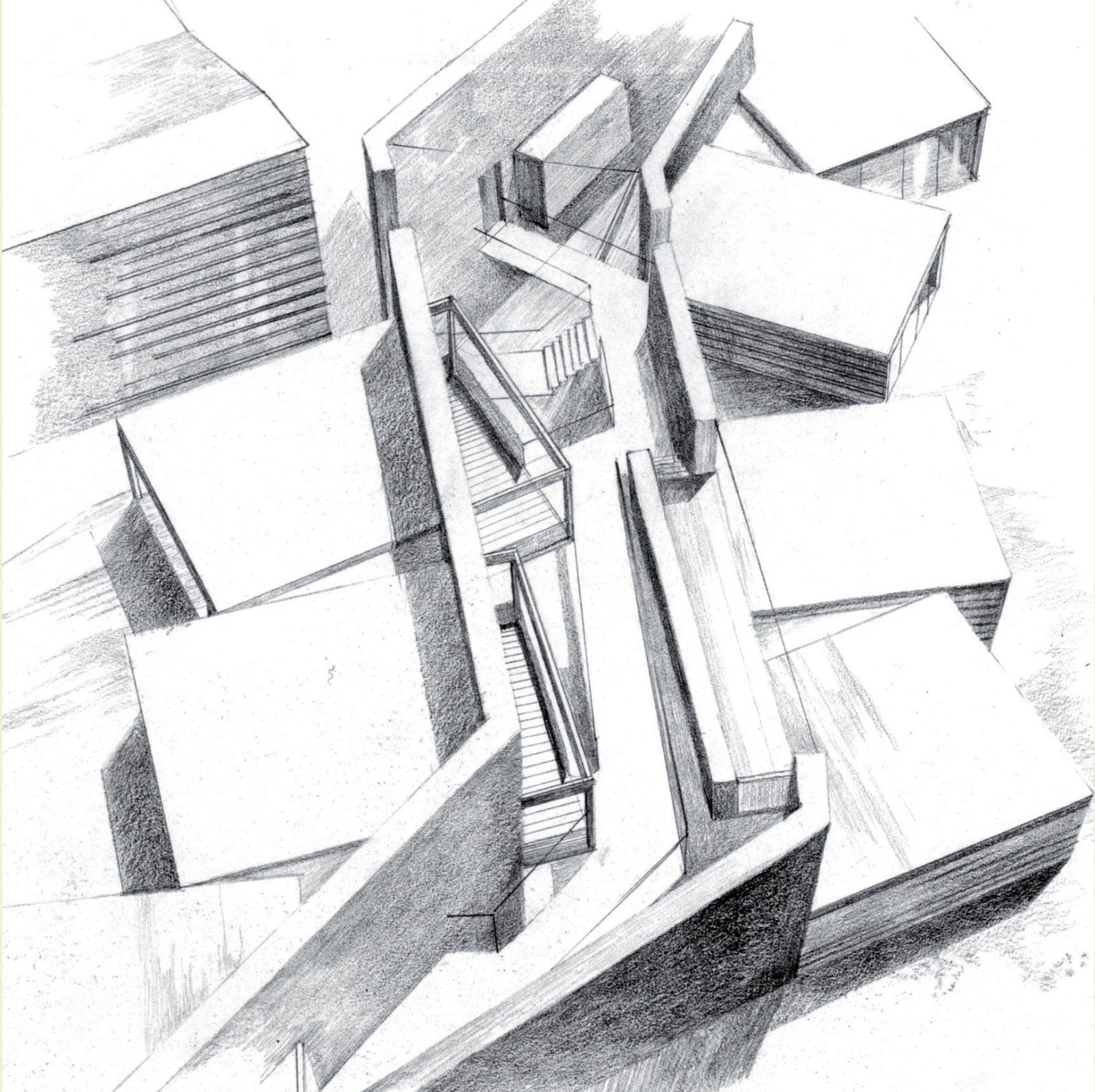
**Helen Kelly,**  
Malcolm Fraser Architects

**Calum Duncan,**  
Malcolm Fraser Architects

**Guy Scott,**  
Richard Murphy Architects

Students:

2004	2005	2006	2007	2008
Kirstin Aitkin	Laura Barnfield	Mie Akune	Natsai Chieza	Charoula Angeli
Thomas Bryans	Alistair Buchanan	Eleanor Campbell	Richard Collins	Harriet Brisley
Cosmo Cardozo	Bill Chan	Aaron Jones	Andrew Dawson	Ju-Hyung (John) Chun
George Collins	Hazel Cowie	Fiona MacDonald	Claire Freake	Stuart Franks
Matthew Cunningham	Jacky Fok	Neil McDonald	Rachael Gorrie	Nicholas Kehagias
Chris Donaldson	Chris French	Fraser McLeish	Meagan Graham	Deborah Kent
Shuyuan (Joe) Fei	Gisela Funk	Michael Mullins	Vicky Harrison	Maria Kouzmenko
Hannah Gillespie	Jemima Garthwaite	Mairi Ogilvie	Richard Horsfield	Gemma Learmouth
Claire Goodsell	Laura Hawkins	Sarah Oxley	Tierney Lovell	Josephine Low
Sana Hashmi	Gerald Huber	Christopher Raeburn	Nicholas Lowe	Kathryn Lynch
Craig Hutchinson	William Layzell	Raini Scott	Catriona Macdonald	Carrie Macpherson
Carolyn Jamieson	Paul Nicol	Victoria Simpson	Brian Maguire	Gabiela Maskrey
Fiona Kelling	Lionel Real De Azua	Martin Sinclair	Alexander Murray	Fiona Morrison
Michelle Obayda	Robbie Sholdis	Sarah Warnock	Deborah Pullinger	Emilie Nilsson
Elizabeth Parker	Joanna Simpson	Stuart Westwater	Anne Kristin Risnes	Christopher Obayda
Alexander Scott	Julia Taylor	Daisuke Yukawa	Hannah Rowley	Allison Secker
Bhavna Singhal	Ben Thompson		Shalita Sachdev	Christina Sinclair
Melissa Stickl	Hazel Thomson		Matthew Spence	
Sheona White	Nicholas Walker			



Acknowledgements:

**Ian Gilzean,**  
Scottish Government Architecture Policy Unit

**Sam Cassels,**  
Design Advisor, Schools Design Programme,  
Architecture and Design Scotland

**Sadie Miller,**  
Headteacher, Niddrie Mill Primary School,  
Edinburgh

**Margaret Duff,**  
Headteacher, St Francis Primary School, Edinburgh

**Gordon Robertson,**  
Headteacher, Bonaly Primary School, Edinburgh

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# What is a primary school?

For the last five years, this is the question third year architecture students at the University of Edinburgh have first had to grapple with before deciding on a design response.

But it is a question not only being considered by them. Recent years have presented education authorities across Scotland with a massive investment in new school buildings and also, more recently, with a new curriculum to deal with.

To grasp this opportunity, the Scottish Government's 'Building Excellence' programme of 2007 brought together educationalists and building professionals to consider the implications of Curriculum for Excellence for school design. While no clear models emerged from this work, it was generally accepted that if the new curriculum is to support learners in developing a wider range of skills and provide them with a greater variety of experiences and choice, this would demand learning environments which were more dynamic, versatile and 'inspired learning' themselves.

However, there is a growing recognition that recent new school buildings - while always welcome improvements to an educational estate which has generally languished in such a poor condition for so long - have perhaps too rarely pushed the boundaries in terms of rethinking educational space or architectural design.

Perhaps there is an inherent difficulty in exploring new ideas within a real building programme, particularly one in which the key players - teachers and construction companies - are two sectors not associated with taking risks?

But if changing minds, challenging assumptions and providing new ideas is what is needed, and built models are not readily available, then another source of fresh ideas is sorely needed.

The work of the unit therefore provides a great opportunity to link the creative imaginations of architecture students, unhindered by constraints, with the real need for fresh, 'out of the box', thinking to inform educational briefs and explore new spatial possibilities.

To be involved in the unit's work has been an immensely enjoyable and rewarding experience for me. After assisting with providing a real context to the work - the students were furnished with a real site, space budget and a visit to see a working school - I later returned to participate in the reviews.

Sitting as a reviewer was the highlight of my involvement. Indeed, it sometimes felt akin to being at a Milan fashion show. Individually, each student presented their work, invariably capturing an essential idea about what a primary school should be and following it through to design resolution.

And I realised that just like the way the bold, experimental, challenging designs on a Milan catwalk eventually go on to influence real designs on the high street, so too this 'catwalk of primary school design' contains many new and interesting ideas which have the potential to inform design decisions in real projects 'on the ground'.

I have been impressed, too, by how well the students' collective work over the 5 years of the unit has researched, understood and addressed many of the fundamental dilemmas and wider issues facing school designers today. The work - now pulled together in this booklet and cleverly presented as a series of 'thematic couplets' - can make a valuable contribution to raising debate, challenging assumptions and widening the horizons of those involved in shaping the direction of primary schools in the future.

I remember a visit to two primary schools in Hampshire 15 years ago - Woodlea and Queens Inclosure - and my surprise at the time that two so startlingly different buildings could emerge from the same brief. I became convinced that the primary school is quite a robust building type - one that deserves - and can handle - a bit of experimentation.

Just as Curriculum for Excellence has challenged schools to consider more creatively the ways in which learning can take place, I hope that the work of the students here can assist those involved in re-visioning the learning spaces of the future.

**Keith Thomson**  
**City of Edinburgh Council, Children and Families**  
**July 2009**



# The Architecture of Hope

The design of any new school is an extraordinary expression of hope. It compels us to imagine better ways of being.

“ Everything now proven was once only imagined ”  
– William Blake

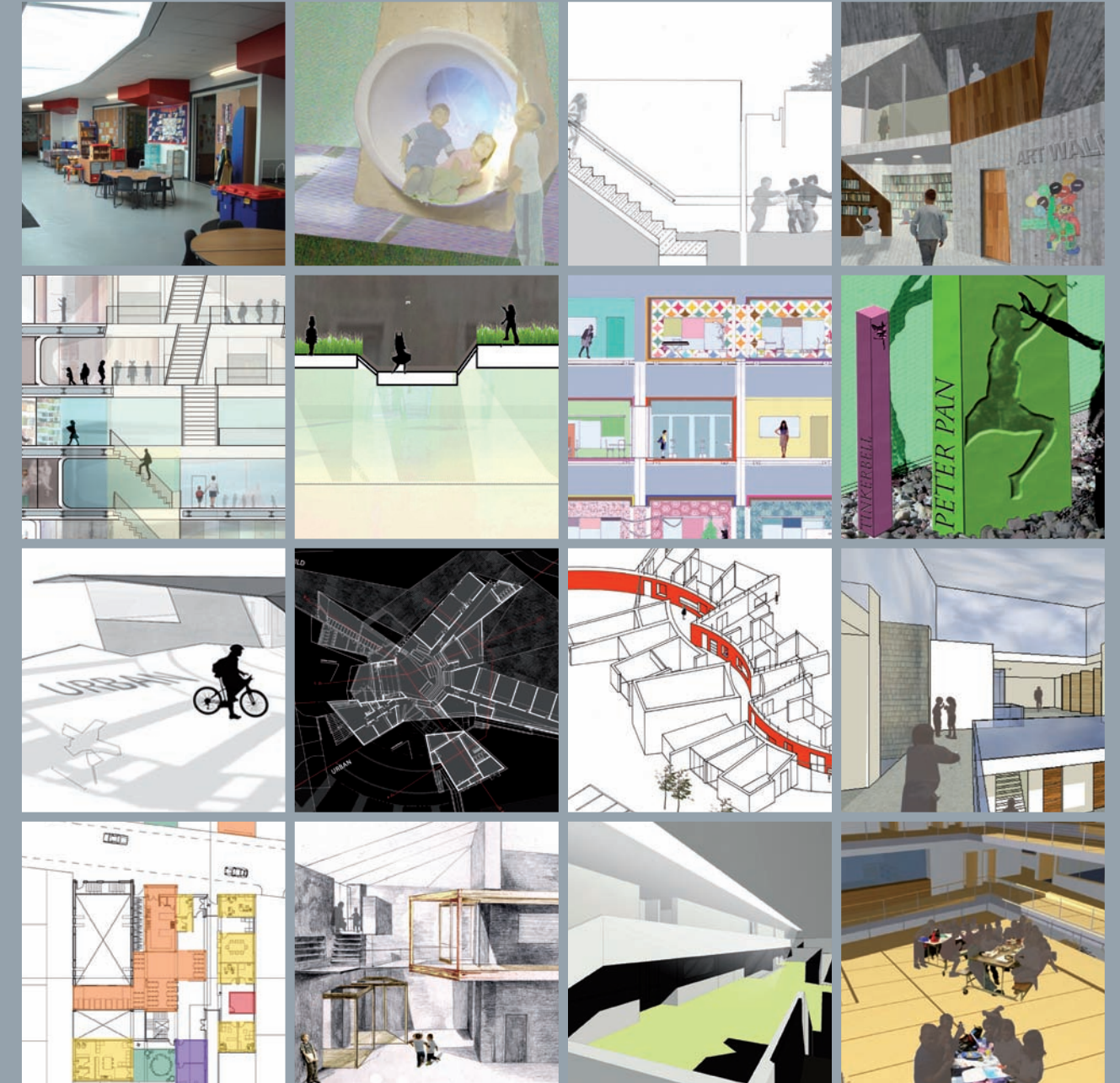
To do this we need a ‘pattern language’ to help feed our imaginations and paint a picture of the schools we passionately want.

Architecture is not a foreign country. It is however a place with its own language and customs. When we travel we are challenged by what we see to see our own surroundings in a different way. New things become possible because we have seen new possibilities. Consultation, engagement, participation – all become meaningless architectural gestures if we refuse to speak each others language. If you believe, as I do, that great design springs from meaningful conversations with those who give significance to our buildings - the people who live in and around them - then we need first of all to understand each other.

Sometimes all it takes to reveal deep seated aspirations or new directions is a heartfelt sentence or a compelling picture. For this to happen we need two ingredients: firstly, a context where everyone has permission for their voice to be heard; and secondly, a wealth of sentences and pictures to choose from which capture and inspire our thoughts and emotions.

That is why the work of these students, and the words and images they use to explore education and design, are so important. They offer a bridge between the often separated cultures of the client, the child, and the designer. They hint at possibilities and potentials in a way which I believe can be enjoyed and exploited by pupils and professionals alike. A translation tool for all of us – providing new ways of communicating our hopes.

Sam Cassels  
Design Advisor  
Schools Design Programme  
Architecture and Design Scotland





Places For Learning

# Chapter 1



## Introduction

“One of the key issues in the design of learning environments, and perhaps one of the key barriers to change, has been the difficulty of developing a common language, vocabulary or ‘spatial literacy’ in what is a very complex and intricate process and product interaction. There has been an enormous amount of research into pedagogy, curriculum, information and communication technology (ICT), as well as other educational fields, but very little rigorous academic research into the design and effectiveness of learning environments.”<sup>1</sup>

## A Place for Learning : An architectural design unit

The architectural design course that has been developed at the University of Edinburgh, and offered to 3<sup>rd</sup> year students for the last 5 years, has asked the students to design a small primary school with the premise of answering the question ‘what is a primary school?’

“There are few simpler, happier briefs for an architect than the bunch of sunny classrooms, gathering places and playgrounds that make a good Primary School.”<sup>2</sup>

The brief focused on a single stream Primary School with a nursery attached. The design programme for the building was developed from The City of Edinburgh Council’s brief for a Primary School that they use for commissioning new schools. While it has been important to allow the students relative freedom in their approach, it was also necessary to ground the projects with a real site and a realistic brief. Keith Thomson, an architect and key member of the City of Edinburgh Education and Families team responsible for commissioning the schools programme, has been involved with the unit since its instigation. In addition to providing the brief, he has advised on sites and has negotiated building visits so that the students could have direct contact with a Head Teacher. This was introduced in the second year of the unit to counter, what was previously seen as a

drift in the students’ work away from a critical understanding of how spaces might be used by teaching staff and pupils. He was also present at each of the final reviews of the students’ design work and so has a good perspective on the value of this unit to an external audience.

## Design process

The location of the site for the student design brief has varied from a larger suburban site within a proposed new quarter of the city, to a tight urban brownfield site within an existing neighbourhood. This change has in turn has provoked a greater breadth of response from the students. We have found the Primary School to be a robust building type that allows innovation and huge variation in design approach and so meets our own educational outcomes.

The course itself is split into 4 “Moves”. Move 1 asks the students to read and report on various policy and guidance documents describing schools design including the Centre for the Built Environment (CABE) publication - “21<sup>st</sup> Century Schools” and the Scottish Executive’s “Building our Future, Scotland’s School Estate”. The intention with Move 1 is to bring the students into the current debate surrounding the design of schools. (Although both of these documents are intended in relation to Secondary School design there are generic approaches within each that should and will impact on Primary School design.) The research provides a knowledge base, which is shared through critical review and discussion and is supplemented by conventional site analysis and precedent studies of key twentieth century schools.

Whilst Move 1 is progressing, Move 2 asks the students to record their notion of the meaning of a school - ‘What is a School?’ by presenting a single image and 100 words of text to describe it. These are referred to as “Iconographies”<sup>3</sup>. It is interesting to reflect on these often highly personal, subjective and experiential notions of the meaning of a primary school alongside the regimented analysis of the ‘real world’ policy documents.

For a number of students, the Iconography acts as a catalyst for the development of initial design proposals for their school and aids the exploration of the typology. This then leads into Move 3 which is an investigation into the detailed design of a portion of the school. This engages the students with the scale, touch, intimacy and materiality of their proposals at a stage where they have not entirely finalised the layout. Engaging with the ‘haptic’ and detailed construction helps to both ground the work, but also further explore the quality of a small area of the design. Finally, in Move 4 the students must resolve the design, internal and external spaces, circulation and in three dimensions and present their proposals to an audience.

Over the five years of the course, there have been recurring themes in the design approaches that can, in part, be related to the notions of a “Fortress School, Dispersed School, The Network School and the Extended School” as identified in the 21<sup>st</sup> Century Schools publication. In addition, a number of different space distribution typologies have emerged. [Figure 1 – typology diagrams] These may replicate some well known school forms, such as those based on a microcosm of a street scape, fan shape, courtyard, atrium, cluster and cloistered linear plans and other may challenge and extend the typology with more radical solutions. Although useful as a summary of the range of approaches taken, plan diagrams fall short of articulating the spatial complexity and richness within much of the work.

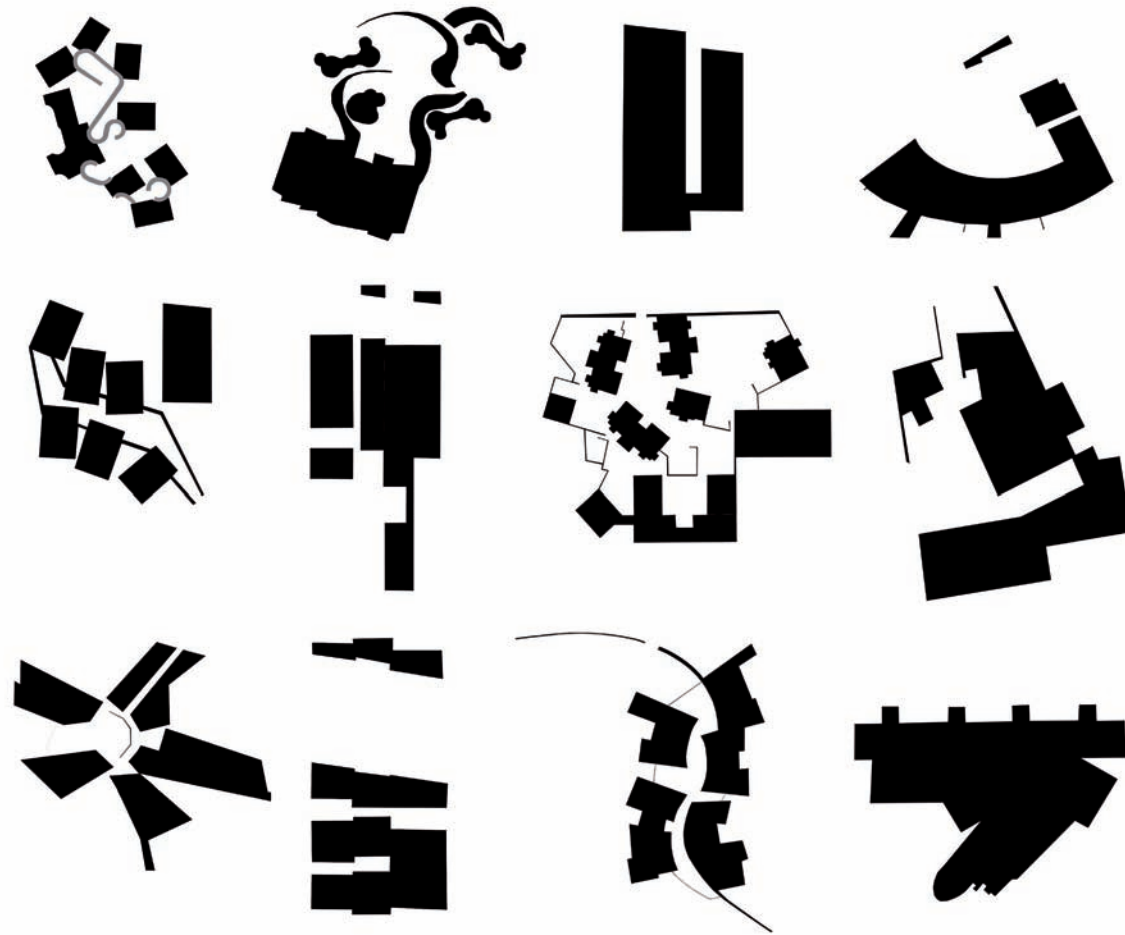


Figure 1 Typology diagrams

To analyse the work further and, in anticipation of its use by a lay audience, a series of couplets have been developed that present possibilities of defining a pattern language for schools design. In turn, this pattern language might contribute to the question ‘what is a school?’ It may also provide an accessible way into the briefing process for teaching staff and pupils which would give them a greater understanding of what can be achieved in the design of their primary school. Crucial to our reflection on this work is the presentation of the vignettes in the context of the Curriculum for Excellence.

The brief for our students makes reference to the architect, Louis Kahn:

#### Unit Introduction:

“A sculptor is working on a large block of granite. He hacks away at the formless block every day. One day a little boy comes by and says, “What are you looking for?” “Wait and see”, answers the sculptor. After a few days the little boy comes back, and now the sculptor has carved a beautiful horse out of the granite. The boy stares at it in amazement, then he turns to the sculptor and says, “How did you know it was in there?”<sup>4</sup>”

#### Form, Order, Design

Louis Kahn, (like Aristotle before him) believed that all materials, objects (and building types) will tell you what they want to be. That there is a “form” (not meaning a particular shape) which is inherent in that being. A horse is a horse, and we understand what “horse” is. Horses differ in shape, colour height and personality but they all have sufficient horseness to identify them as such. Equally a chair, spoon or brick will have specific characteristics which define a spoon as, for instance, different from a fork, a chair different from a couch etc. So can a building type tell us what it wants to be?”

The suggestion in the brief, therefore, is that there could be essential qualities and characteristics that would identify a primary school as different from another type of building. The students are then asked to consider if they agree, and if so what these characteristics might be.



## The Curriculum for Excellence<sup>5</sup>

Concurrent with the school unit, a major review of education has been taking place in Scotland.

In 2002 the Scottish Executive, (now Scottish Government) undertook the most extensive consultation<sup>6</sup> on the state of education in Scotland, which resulted in the publication of the document 'A Curriculum for Excellence' in 2004. Consultation had questioned the previous educational structure and objectives in Scotland. Through this questioning, the aim was to 'establish clear values, purposes and principles for education from 3 to 18.'<sup>7</sup> Full implementation of the new Curriculum took place during 2008.

One of the main flaws of the previous system that the 'Curriculum for Excellence' highlighted was that the education structure for Primary and Secondary schools in Scotland had been developed over a period of time and in separate pieces. These disparate elements '*taken together, do not provide the best basis for an excellent education for every child*'.<sup>8</sup> Therefore the main intention at the centre of the 'Curriculum for Excellence' became a unification of the education structure and curriculum content. "*In essence (it) must be inclusive, be a stimulus for personal achievement and, through the broadening of pupils' experience of the world and be an encouragement towards informed and responsible citizenship*".<sup>9</sup> These intentions are fleshed out within the document to create a series of aims and objectives.

Although the emphasis is on continuity, the role of the Primary School is evidently still very different from the later stages in education. Remembering their own, very different international backgrounds, the students in the unit considered primary education to be as much about developing social skills as providing the foundations for further learning.

## Aims of the Curriculum for Excellence:

The aims of 'Curriculum for Excellence' reflect the importance of social skills and in providing opportunities for all children and young people to develop their capacities, which are defined as:

- Successful Learners
- Confident Individuals

- Responsible Citizens
- Effective contributors

The scope of the Curriculum is noted as extending beyond the standard school subjects to include:

- The ethos and life of the school as a community
- Interdisciplinary projects and studies
- Opportunities for wider achievement

## Proposed Outcomes of the 'Curriculum for Excellence':

The outcomes that are sought from the Curriculum for Excellence that are applicable to Primary Schools are:<sup>10</sup>

- A single curriculum from 3-18 years supported by a simple and effective structure of assessment and qualifications: this will allow the right pace and challenge for young people particularly at critical points like the move from nursery to primary and from primary to secondary,
- more space in the curriculum for work in depth,
- more space for sport, music, dance, drama, art, learning about health, sustainable development and enterprise, and other activities that broaden the life experiences – and life chances – of young people

Given the areas of the aims, outcomes and scope as outlined above, the 'Curriculum for Excellence' has a potentially enormous effect on what is learned, how it is taught and what is assessed in Scottish Schools. This Curriculum is significantly different to the English system as there are no SATS assessments<sup>11</sup> within the Scottish system. Therefore the teaching is presented as being less about getting pupils thorough a series of assessments and more about giving the pupils a holistic well rounded education.

The Curriculum places particular emphasis on how learning and teaching is delivered and how teachers can think differently about their teaching to give as broad an education to pupils as possible. It is universally understood that the physical environment of the school can have a direct effect on the ability to deliver these aims in learning and teaching, yet as this was not seen as the role of the Curriculum document itself, it is not specifically mentioned. The focus is placed on creating an appropriate 'Environment for Learning'<sup>12</sup>, but this relates to 'respectful and constructive relationships'<sup>13</sup> rather than the built fabric.

Considering school design has generally developed in parallel with changing trends in attitudes to education,

developing global patterns of work, and technology, it was interesting for the students to reflect on what may be considered as consistent qualities required of the micro-environment for primary education.

## The School Estate

At the same time as the new Curriculum was being established, Scotland, in common with the rest of the UK, has been in the midst of the biggest school building programme for decades. The funding structure through the Private Finance Initiative (PFI) and subsequently Public, Private Partnership (PPP) has been controversial and the early results of the programme have been criticised as falling well short of quality in design. The Centre for Architecture and the Built Environment (CABE) has been critical of the quality of some early examples, some of which had no dedicated dining space, and classrooms which were either short of natural light or which overheated.

As the procurement process has matured, the collective aim is to raise the aspirations for school design across all sectors involved in the process. The students study international precedents in order to develop a position in relation to their own aspirations for their design and to reflect on the configuration of the various spaces required in most schools.

## Teachers Responses to their teaching environment and the Curriculum for Excellence

As part of the unit, we have made a point of visiting an existing primary school to develop an understanding of educational issues and to see first hand how the school is used. Involving the students in meeting the client group has improved the depth of investigation by the students and their appreciation of the priorities of teaching staff and children. Teachers will be clear about voicing what it is that they do not like about their built environment once they have moved into a new school. However, with such a large investment in building fabric underway, finding a method to enable a clear articulation of the spatial requirements for

effective delivery of the Curriculum for Excellence is seen as a high priority in the current procurement process for schools, not least to ensure value for money. Finding effective methods by which teaching staff can make a contribution to the early stages of the briefing process for a new school is seen as improving the likelihood that the environment will support and enhance teaching and also strengthen the feeling of ownership in the building.

One positive example of this is the recent Bonaly Primary School in the suburbs of Edinburgh. The new primary school, designed by architects Elder and Cannon (as part of a team led by Laing O'Rourke), was opened in late 2008. It is significant in that the Head Teacher, Gordon Robertson, had been heavily involved as part of a team charged with a critical analysis of the successes and failures of the previous rounds.

“ *One of the most dominant responses from the people involved in the schools developed by this process was that they felt disengaged from the process of design* ”<sup>14</sup>

He notes that community involvement, by which he means a wide community including people not directed part of the school users, in the design process is essential to provide a sense of ownership, to ensure value for money and usability in the spaces provided.

A co-ordination team visited exemplar schools across the UK as part of the process. Although they found advisory document useful in stimulating discussion, visits to completed buildings and talking with users was seen as the most effective way of gaining an understanding and clarifying their own thoughts.

The Lighthouse<sup>15</sup>, who have developed workshops for designers, teachers and pupils have engaged in stimulating discussion on the relationship between space and the Curriculum for Excellence. Entitled “Senses of Place: Building Excellence in School Design” (published in 2008) the project aimed to develop aspirations for the design of school buildings and there by bringing together architects and educationalists. It sought to demonstrate how well designed learning environments could support and enhance the delivery of the new Curriculum. This project was commissioned by the Scottish Government, aiming to set a blueprint for meaningful consultation (both in Scotland and beyond) not just for school design, but across a full range of public and community building programmes. In addition, the architects involved were invited to generate innovative but realistic designs which could be built, and which would stand as exemplars that could support schools to deliver Curriculum for Excellence.





Figures 2, 3, 4, 5 and 6 Bonaly Primary School, Edinburgh (Architects: Elder and Canon)

The publication “Schools for the Future” (2004) takes a similar stance inviting and publishing a series of innovative designs that can act as exemplars. It notes their aim to:

- develop a shared vision of Schools for the Future
- create benchmarks for well-designed schools

- push forward the boundaries of innovation and inspiration
- support the delivery of Building Schools for the Future
- encourage industry to develop new ways of delivering school buildings<sup>16</sup>

As further Scottish document, “Quality Indicators in the Design of Schools (Qids<sup>17</sup>)” was cited, by the Head Teacher as being of help in considering design value.

As part of the early stages of the University design unit, students work in groups to research and analyse examples of current literature as a way of understanding the social and political climate in which they are designing. Although they will eventually practice all over the world, it has been interesting to reflect on common aspirations in relation to design quality.

## Aiding effective communication

Bonaly Primary School seems to have been a happy coincidence of informed client, high profile and experienced architect and the benefit of hindsight gleaned by all parties. Key to this was the personal and trusting relationship between architect and Head teacher, which he admits tended to shortcut the intended, and formally defined communication chain, from time to time. That an almost traditional client: architect bond was allowed to function is a sign that the procurement process may now have a greater degree of flexibility.

In the more common instance where a school is thrown into the commissioning process with little of no experience of briefing, could the speculative work of architectural students serve to stimulating discussion, add a different perspective to the available policy and advisory documents and help teachers and other stakeholders to articulate their vision?

Sam Cassels, a recently appointed, Schools Design Advisor at Architecture and Design Scotland (A+DS)<sup>18</sup>, a government-funded body tasked with a key role in the delivery of the Scottish Architecture Policy,<sup>19</sup> has recognised the potential use of student work in informing and stimulating dialogue and has funded the creation of an “Image Bank”. Adopting the title “A pattern language for schools”,<sup>20</sup> the study is a pilot as part of a wider initiative by A+DS on the quality of school design in Scotland.<sup>21</sup>

An Elemental Pattern  
Language for Schools

# Chapter 2



## An Elemental Pattern Language for Schools

The student work can be read in a number of ways. Some complete designs are illustrated in this booklet, but as part of our subsequent discussions with A+DS, consistent themes in relation to primary school design have been drawn out as couplets. Each couplet that is highlighted in this section describes a recurring theme that has appeared through the student projects, and is illustrated by quotations from Christopher Alexander's 'A Pattern Language Towns, Building, Construction' associative word lists, and a series of images from the 3<sup>rd</sup> year honours student's projects.

### Individual/Collective



Fig. 7 Sarah Oxley



Fig. 8 Stuart Franks

*“no one can be close to others without also having frequent opportunities to be alone”<sup>22</sup>*

*“there is a critical point beyond which closer contact with another person will no longer lead to an increase in empathy....this limit to the capacity to empathise should be taken into account in planning the optimal size and concentration of urban populations, as well as in planning the schools and housing of individual families.”<sup>23</sup>*

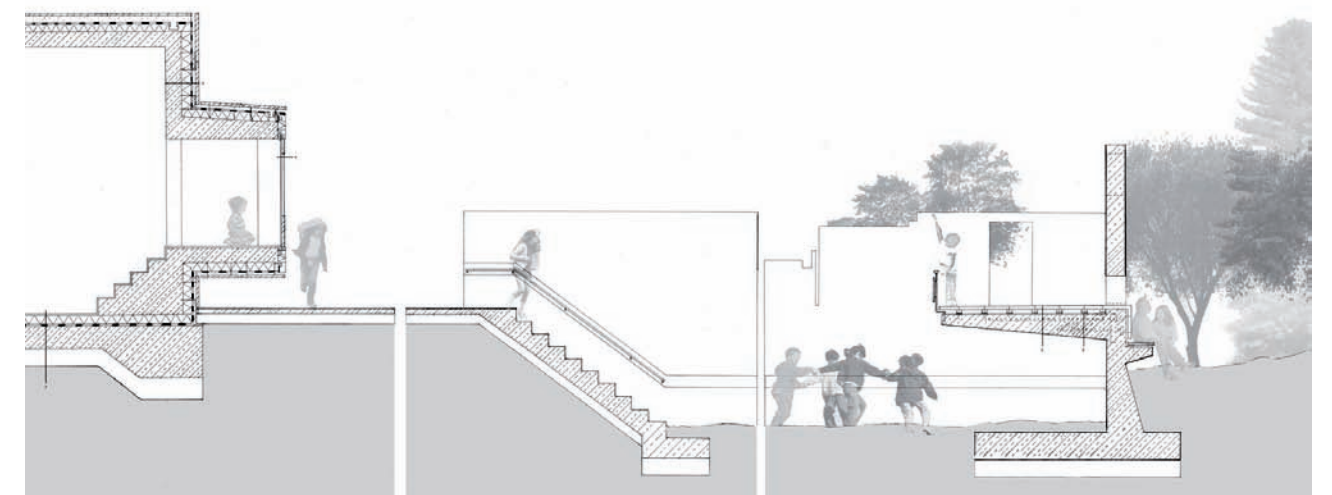


Fig. 9 Poppy Taylor

Everyone needs a space that they can identify as their own within the community of the school, even if it is simply a place to put their coat and shoes. Within the school itself a variety of different sized spaces allows the collection of different sized groups of pupils for study or socialising. This in turn engenders and understanding of the structure of a community and the child's place within the society. The notion of an individual within a social collective also refers to the model of an “extended school” whose main characteristic is to bring aspects of community life within the school in the hope that this will bring coherence both to the school and the community it sits within.

“ At the heart of educational thinking however is a timeless quality that a sense of individuality and community are both sacrosanct. Both need to be nurtured in order to overcome the social problems that exist to an even greater extent that they did two generations ago. Both are nurtured by creating spaces that can help contemplation and creativity, where every child can enjoy the privacy of his or her own world as well as being part of a larger social community. <sup>24</sup> ”



Fig. 10 Nicholas Kehagias



Fig. 11 Nicholas Kehagias

The Curriculum for Excellence places strong emphasis on what might be considered as “soft” or “transferable skills”, most notably:

- Confident Individuals
- Responsible Citizens
- Effective contributors

Gordon Robertson noted that part of their philosophy at Bonaly Primary School is about “Openness”. Providing spaces where small groups, one to one sessions, and larger classes are semi-open plan and flexible can enhance these aims by making shared activity and planning of activity a natural occurrence. “...the semi-open plan puts learning on show and is a fundamental part of this building....it forges entirely different relationships”

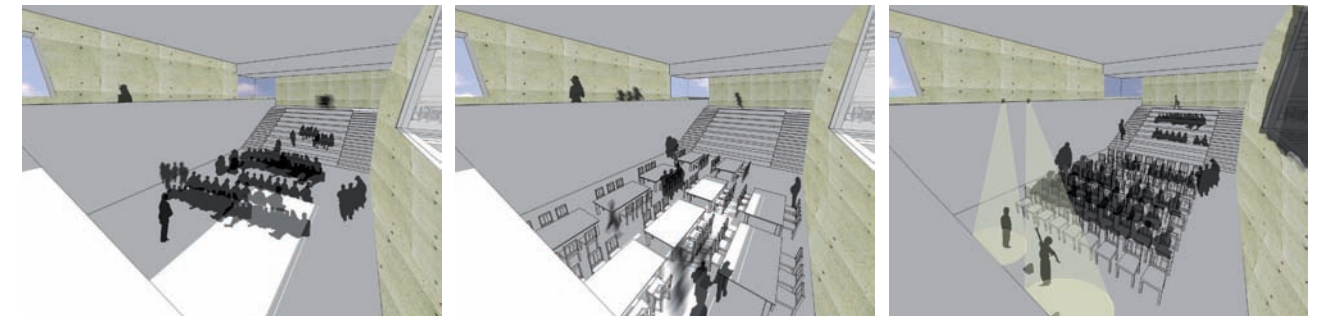


Fig. 12 Will Layzell

## Individual

Coat hook  
Shoe store  
Window seat

## Collective

Small group  
Large group  
Class  
Year Group  
School  
Community

Many designs included spaces into which a single or couple of children could retreat. The brief was left open to interpretation on how flexible large communal spaces should be. Students, commonly in their early twenties, tend to have clear memories of primary school, what they cherished as a child and how they might improve of the provision they experienced. Primary schools were seen by most students as being an essential place for developing social skills as well as the basic tools for learning. Many of the designs explore the idea of the individual and the collective.



Scale/Wonder

“ A building in which the ceiling heights are all the same is virtually incapable of making people comfortable <sup>25</sup> ”



Fig. 13 Nicholas Kehagias

Providing a variety of vertical scales within a building creates spaces of different degrees of wonder. It also accentuates the difference between types of space and heightens the appreciation of the intimacy of smaller spaces. Bringing light into the building in as many ways as possible not only provides a healthier naturally lit environment but can bring in glimpses of the sky, trees and the surrounding city and community.



Fig. 14 John Chun

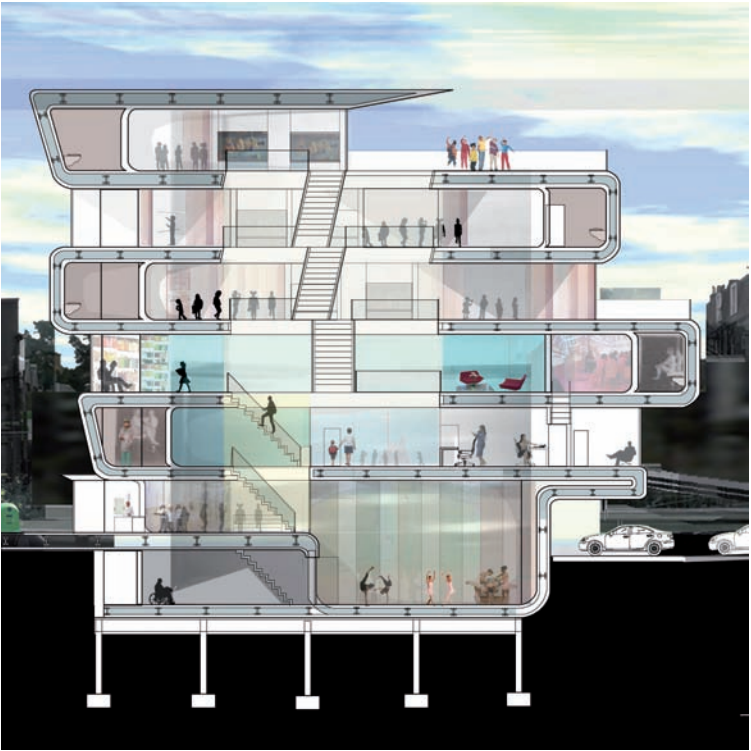


Fig. 15 Harriet Brisley

Scale

- Small spaces for 1 to 1 tuition
- Small group work area
- Classroom
- Group of classrooms
- Hall/Gym
- School as a whole

Wonder

- Height
- Light
- View

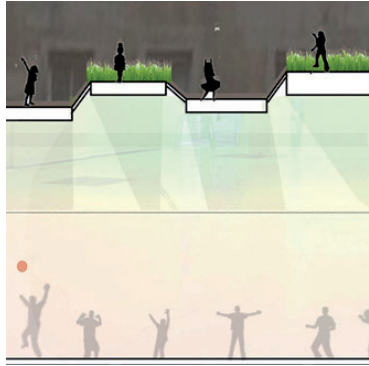


Fig. 16 Harriet Brisley



Fig 17 Nicholas Kehagias



Fig 18 Joanna Simpson

In the example of Bonaly Primary, not only were a variety of ceiling heights seen as essential, a key aim was to ensure that a minimum ceiling height was set which would be generous. Spatial complexity was a key element of the students' design work. Interplay in section was considered as essential by staff in developing the design ability of the students at this stage. The tight urban site used in the last three years was deliberately chosen to encourage students to consider multi-level solutions rather than the single storey forms, which had been common on the large suburban site.

## Protection/Freedom

“Buildings...with a graceful transition between the street and the inside are more tranquil than those which open directly. The experience of entering a building influences the way you feel inside the building, If the transition is too abrupt there is no feeling of arrival and the inside of the building fails to be an inner sanctum.”



Fig. 19 Tom Hunt



Fig. 20 Nicholas Kehagias

This couplet could be considered as a reflection on the 21<sup>st</sup> century school publication's model of a “fortress school”. A fortress school protects the community of the school by placing a clear barrier between it and the rest of the world. It provides clear differentiation between work, play and home. The fortress school does engender an understanding of a notion of school and community within the pupils; however, it is one of separation and not integration and connection.



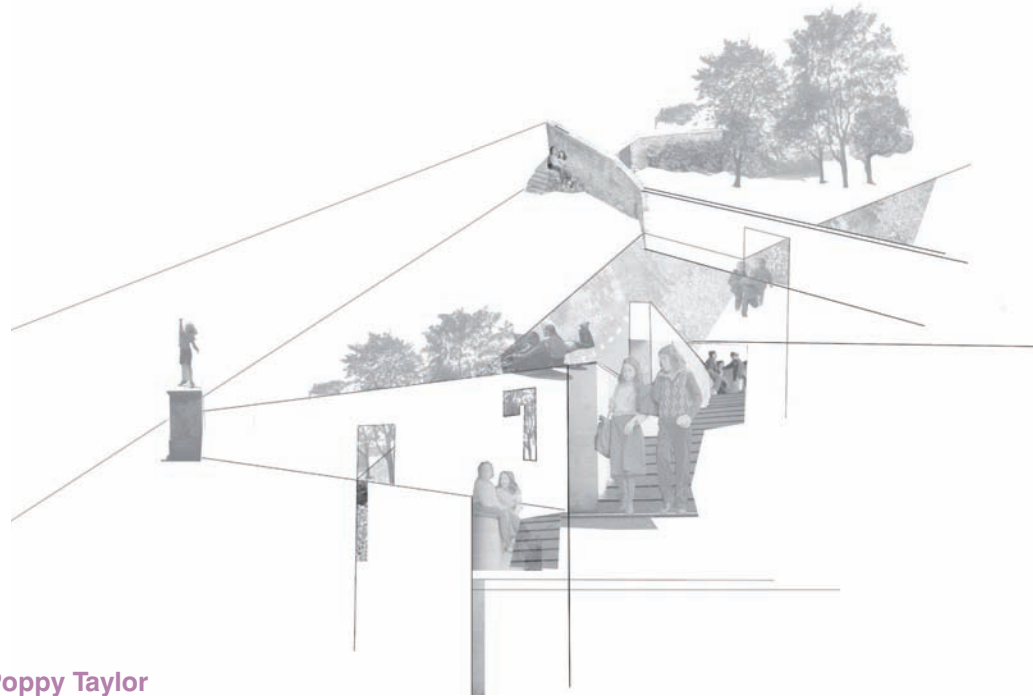


Fig. 21 Poppy Taylor

## Protection

Gate  
Door  
Wall  
Secure  
Safe  
Inward looking  
Enclosed  
Restricted

## Freedom

Open  
Opportunity  
Potential Danger

The relationship between a school and its neighbourhood community is seen as an essential factor in developing a child's sense of place in society, yet the need for safety is paramount to parents. Achieving a balance between safety, without cossetting children excessively is part of the challenge of school design and

management. The strongest designs will integrate barriers into the streetscape. Students found the need for security depressing and tended to take extreme positions, either adopting the metaphor of a fortress or bound garden, or taking a more liberal approach. Students were however, well aware of the psychological importance of trust placed in the school by parents.



Fig. 22 Stuart Franks

The urban site chosen was particularly challenging as it abuts a canal. A teacher we consulted was not against the idea of a primary school on a canal, balancing the opportunities for teaching and learning from the waterfront against the obvious danger. It would be much less likely happen in a real situation, as one would anticipate the risk assessment being too onerous.

At Bonaly Primary School they have recognized the need for a clear boundary at the perimeter of the school that protects and contains pupils but allows them a visual connection to the community beyond.



# Order /Disorder

“ In any building - house office public building, summer cottage – people need a gradient of settings which have different degrees of intimacy. .... When there is a gradient of this kind, people can give each encounter different shades of meaning. The homogeneity of space where every room has a similar degree of intimacy, rubs out all possible subtlety of social interaction in the building.”

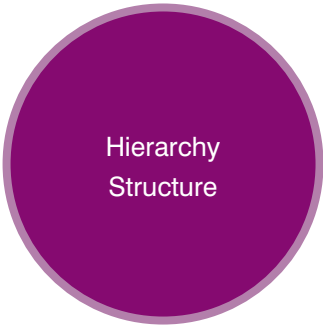


Fig. 23 Deborah Kent

A hierarchy/physical structure of the classrooms within the school itself can provide an analogy of a microcosm of the city that it sits within. It can aid navigation and a sense of achievement through progression. School children readily understand the need for different types of space both internally and externally for play. Figure 9 shows a clear example of this, the variety of scales of space and their relation to one another is clear in the section of a classroom and the playground.

At one of the PPP1 schools visited, the teachers bemoaned the fact that the PPP mechanism meant that the school was, in effect, on loan to them and had to be returned in thirty years time. Inappropriately carpeted classrooms prevented spontaneity of use and mess was contained into designated wet zones. The students found this to be a depressing situation and a number sought to bring ordered disorder, or invite a degree of discord into the planning to give a sense of a dynamic life.

## Order



## Disorder



Fig. 24 Alexander Scott

Light/Dark

“ *very few things have so much effect on the feeling inside a room as the sun shining into it* <sup>28</sup> ”



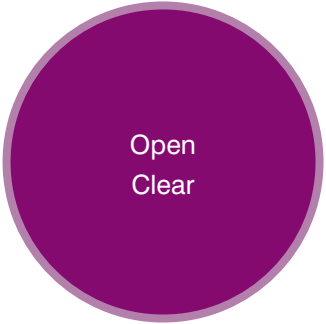
Fig. 25 Will Layzell



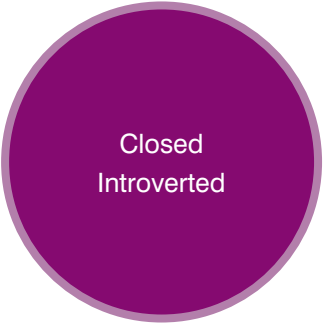
Fig. 26 Jemima Garthwaite

It is widely acknowledged that classrooms need to have good natural light levels and that light needs to come from at least 2 directions into the room so that the modelling of shapes can be clearly read. Today there is a potential for conflict with “Smart boards” and data projectors. The designs were inconclusive on orientation, but the strongest work used light to enliven and give character to the spaces.

Light



Dark



Variety seems to be essential in provided spatially complex and lively schools. Students work can test more extreme conditions. Mainstream schools tend not to favour extremes of texture, or low lighting to avoid places where students can lurk or hide, but it is recognised that occasionally a school child may respond to a dark, soft space if dealing with personal issues. Hazelwood School for the Sensory Impaired by Murray Dunlop Architects in Glasgow is an example of a school that has been designed to be rich in texture and differing lighting quality. This is to heighten the senses responses to the different spaces in the school. Whilst this could be construed as a distraction in mainstream schools in this case it is essential to enhance the pupils understanding of their environment.

# Flexibility/Permanence

“ *Is it possible to create a kind of space which is specifically tuned to the needs of people working, and yet capable of an infinite number of various arrangements and combinations within it.* <sup>29</sup> ”



Fig. 27 Harriet Brisley

Many of the schools that we have visited during the development of this course either have or wish to have classrooms which have the flexibility to be connected to one another when required.

Those involved in education at any level are all too familiar with the seemingly constant change in the sector. Architectural provision, although renewable to some degree, must be sufficiently flexible to accommodate oscillations in the numbers of children, as well as the philosophical approach. Debates over open plan versus traditional classrooms have been cyclical in education. The 1965 “The Primary Memorandum” was a key generator of progressive free-learning which manifested itself in a move for open plan spaces, but was followed by the more structured “5-14” Curriculum. The Curriculum for Excellence demands “active and co-operative learning” <sup>30</sup>. One of the most successful and popular models to emerge from the Scottish programme has been the pairing of semi-open plan classrooms adjacent to a generous spill out space.

## Flexibility



## Permanence



Although in the first year of the unit, the students tended to produce quite traditional classrooms, they responded well to hearing directly from the Head teacher on the way in which the child centered teaching based on learning profiles is demanding more flexible and varied spaces. Well-designed and imaginative circulation provided one of the best opportunities to introduce a strong sense of place.



# Outdoors/Indoors

“ They (people) need an outdoor room, a literal outdoor room – a partly enclosed space, outdoors, but enough like a room so that people behave as they do in rooms, but with the added beauties of the sun, and wind, and smells, and rustling leaves.... This need occurs everywhere. It is hardly too much to say that every building needs an outdoor room attached to it, between it and the garden. ”<sup>31</sup>

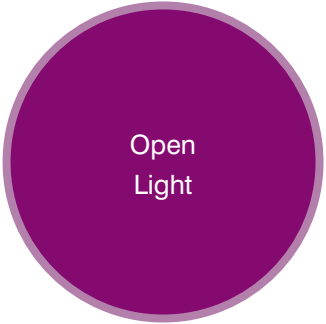


Fig. 28 Jemima Garthwaite



Fig. 29 Jemima Garthwaite

## Outdoors



## Indoors



The Christopher Alexander quotation describes a threshold space, somewhere that is neither indoors or outdoors. Bonaly School had used a number of spaces to this end. The nursery had been designed with a porch space that caught the sun so lessons could take place outdoors. In the final year a balcony space was being used as an alternative classroom in warm weather. The pupils had decided to move their desks and chairs outside for a lesson.

Many of the students imagined these outdoor/indoor spaces as additions to the learning spaces of the school providing not only play spaces but sensory gardens, ponds and vegetable patches. It was interesting how many of these outdoor spaces became as developed as the interiors of the buildings.



Fig. 30, 31, 32 Harriet Brisley

# Chapter 3

Explorations



# Site locations

## Granton Site

Two different sites have been used for the primary school design project. The first is set within a very large scale masterplan for the expansion of Edinburgh to the north west along the River Forth on existing brownfield land. At the time of the design very little had been built giving the students the challenge of design within a vague context, but where there were also little constraints. The site chosen is earmarked for a primary school.

## Canal Site

The second site was chosen to give more restriction and to force the students to consider how a primary school could work on a number of floor levels. The siting was a tight urban location in the west of Edinburgh, which covers the footprint of three light industrial buildings alongside the Union Canal. The area is undergoing a transformation through investment in new business and housing. The new proposed masterplan identifies a need for a new school.

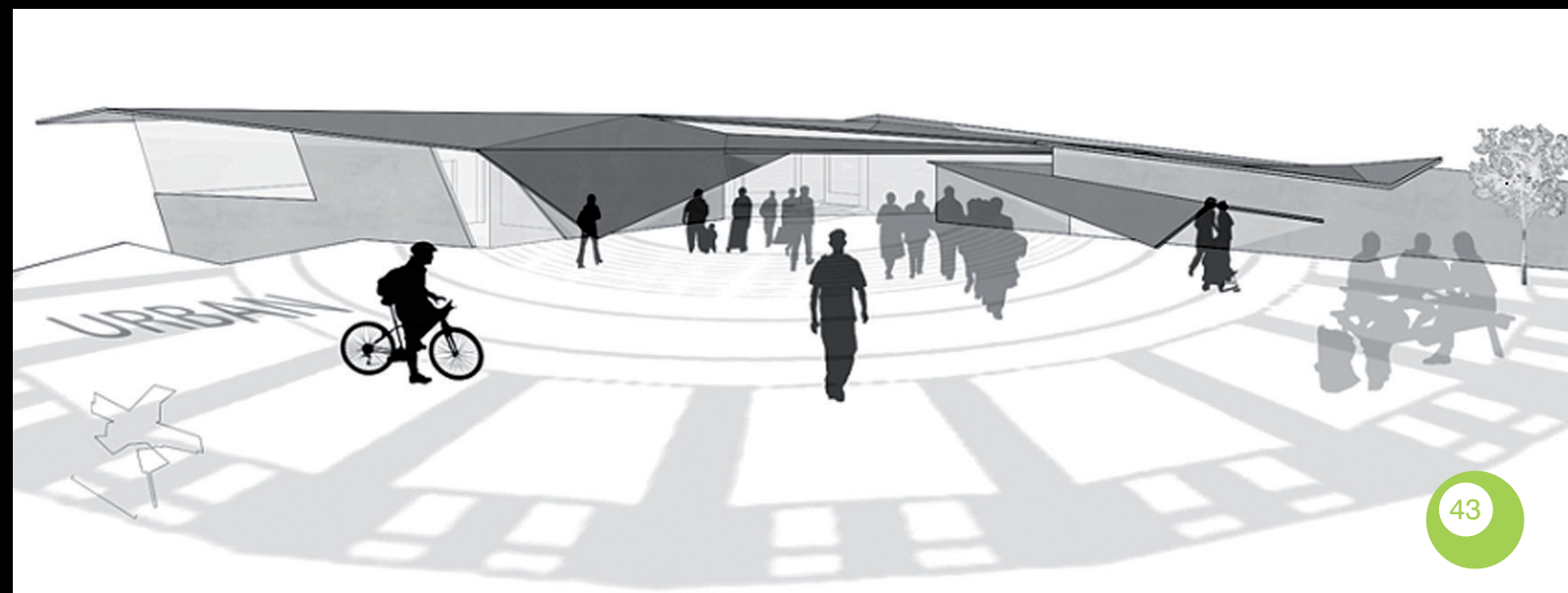
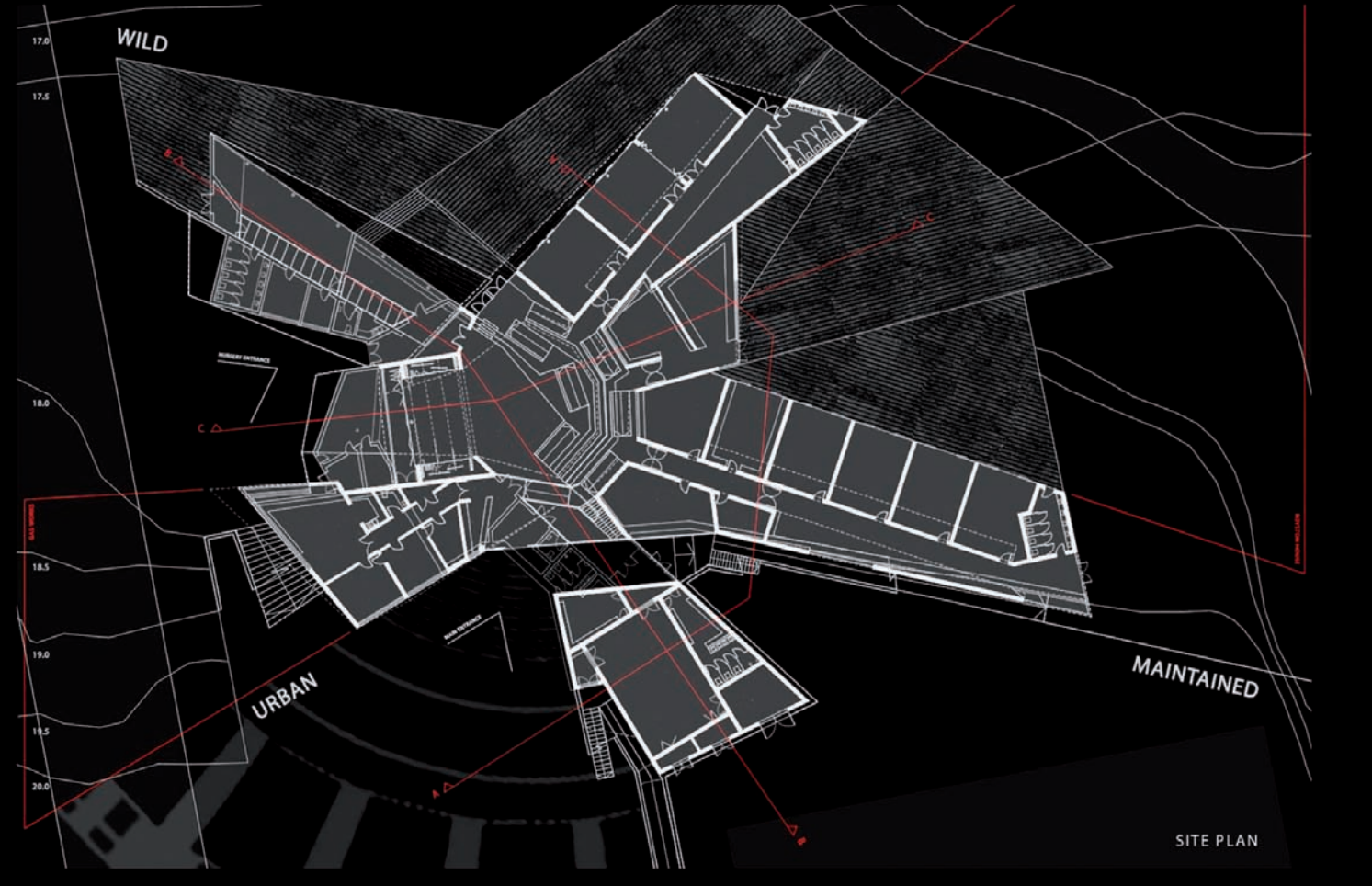
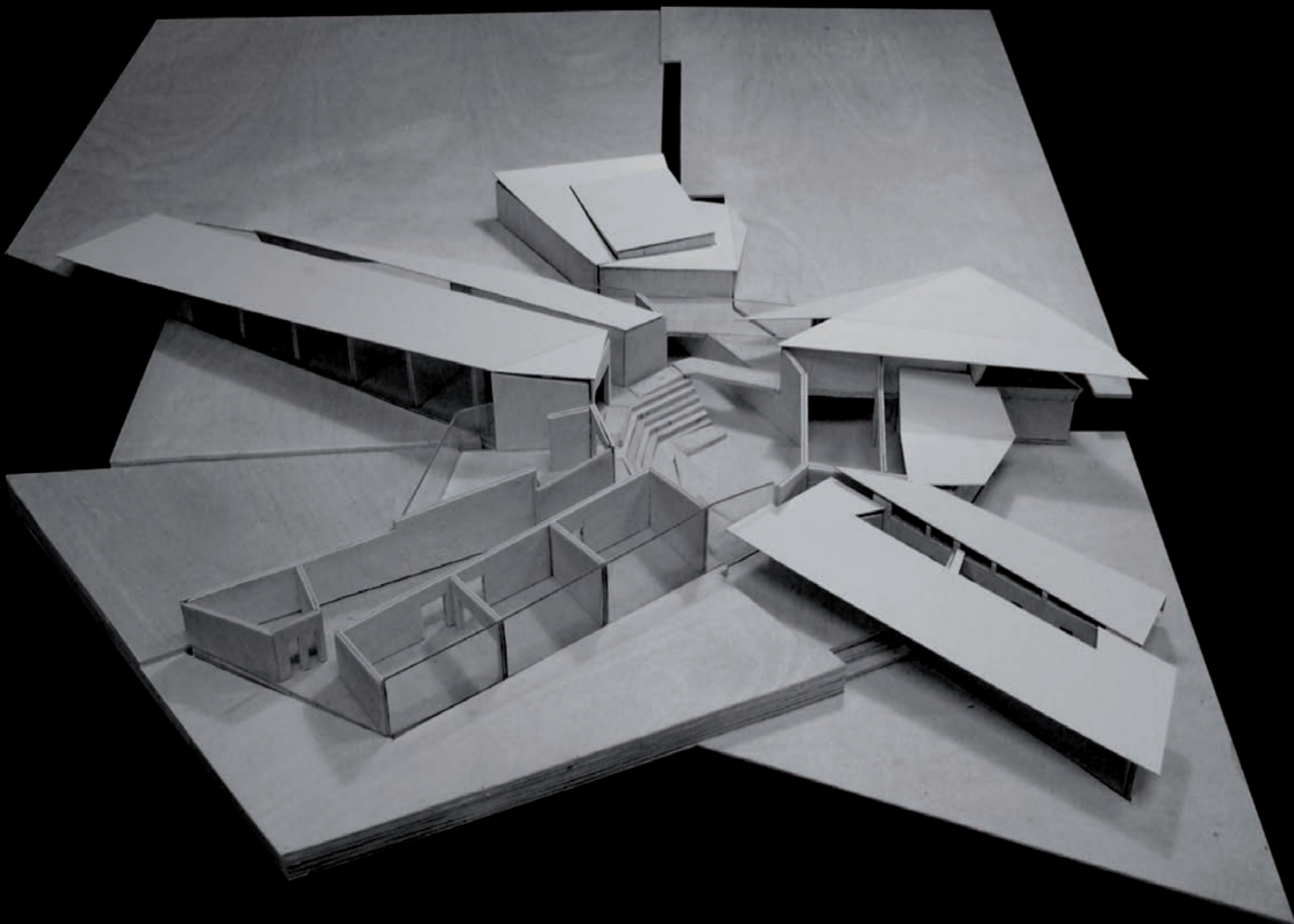
## Thomas Bryans



### Granton Site

The design for this school developed from the notions of the core and pivot found in Jeremy Bentham's Panopticon penitentiary. By inverting Bentham's concept diagram, the building transforms from one of outwards control to inward focus. Bentham's need for absolute security and constant surveillance is replaced by the requirement of a focus for the new community. The core of the school creates a gathering space not only for the pupils during the day but also the community as a whole in the evenings and weekends. The classrooms spill out from this in wings that are tied back to key aspects of the proposed masterplan for the district.





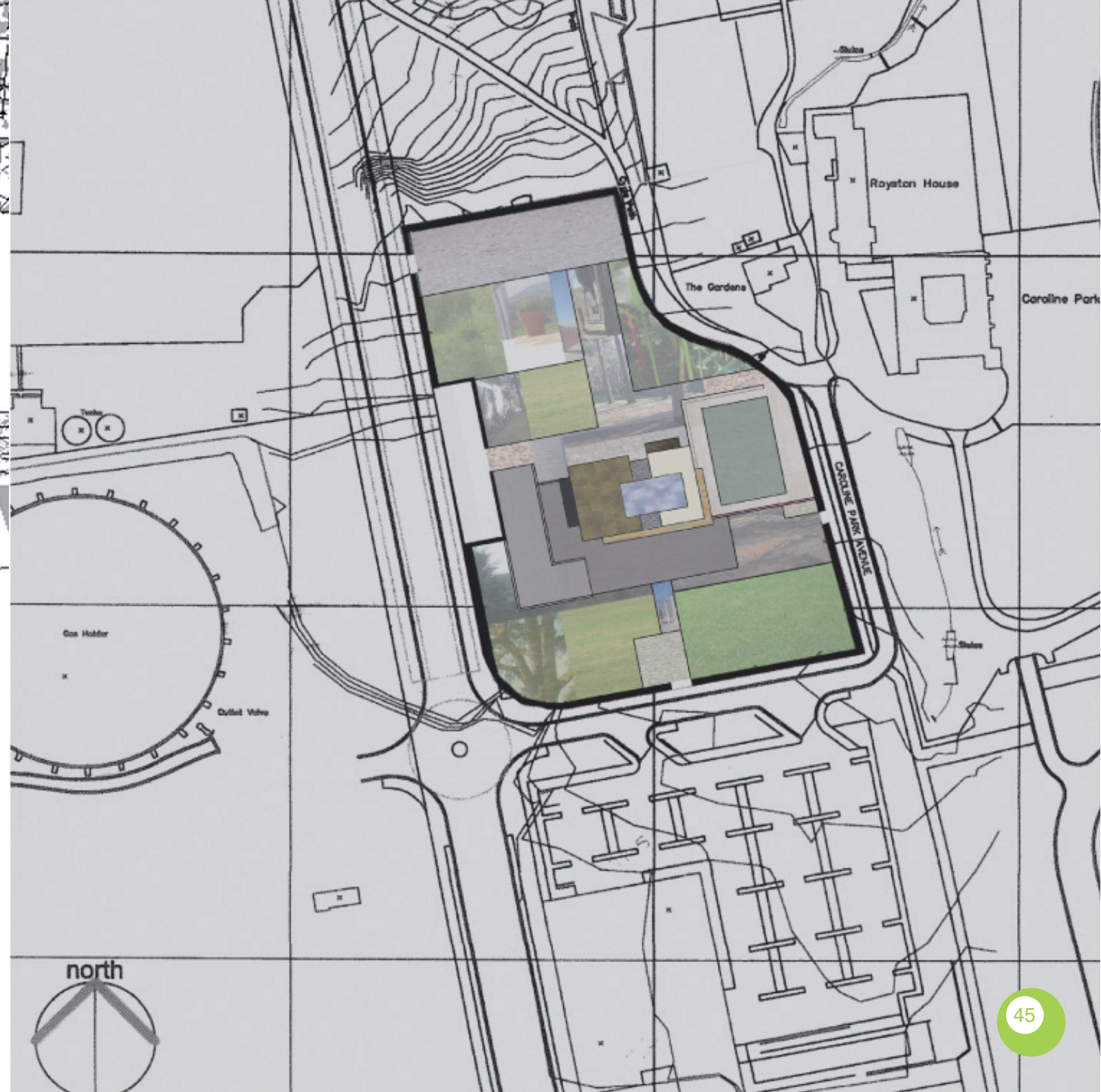


# Joanna Simpson

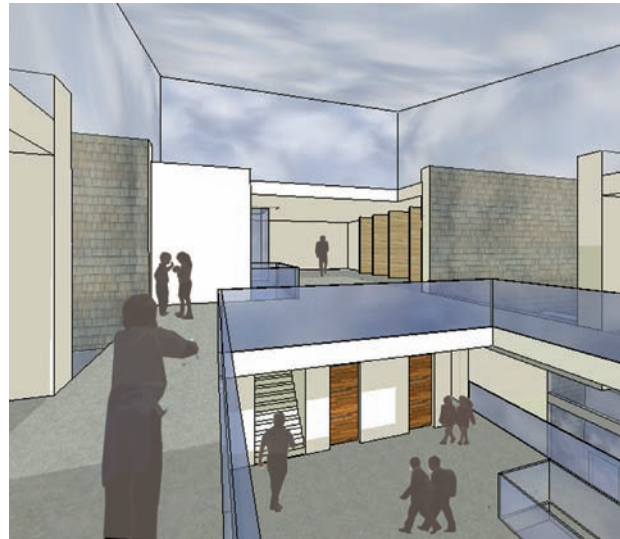
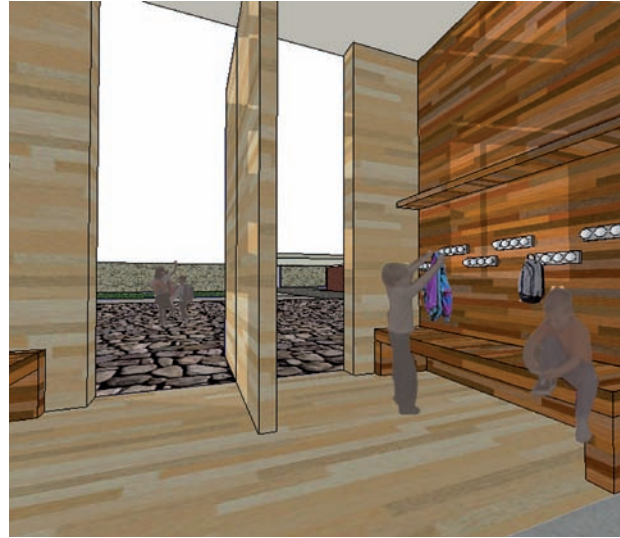


## Granton Site

The proposed school is intended to give a sense of growth in both the day to day life of a child but also in the duration of the child's stay at primary school. This school has taken the model of a Victorian city school, several storeys of rooms arranged around a central void, and reworked it to create a more flexible and welcoming typology that forms a hub for the new community in Granton. Walls that traditionally would not have allowed interaction now rotate as valves opening out to the void and the landscape surrounding the school.







## Sarah Warnock

### Canal Site

This project explores the notion that primary school is the first step out of the domestic realm of the home for a child. The proposed school takes the urban grain of the terraced houses of Gilmore Place to the south of the site and continues their garden lines to the banks of the canal. One of the terraces is adopted into the school to provide a familiar domestic tone to the entrance for the younger pupils. Fingers of building occupy the lines of the gardens and open courtyards connect the buildings to one another.





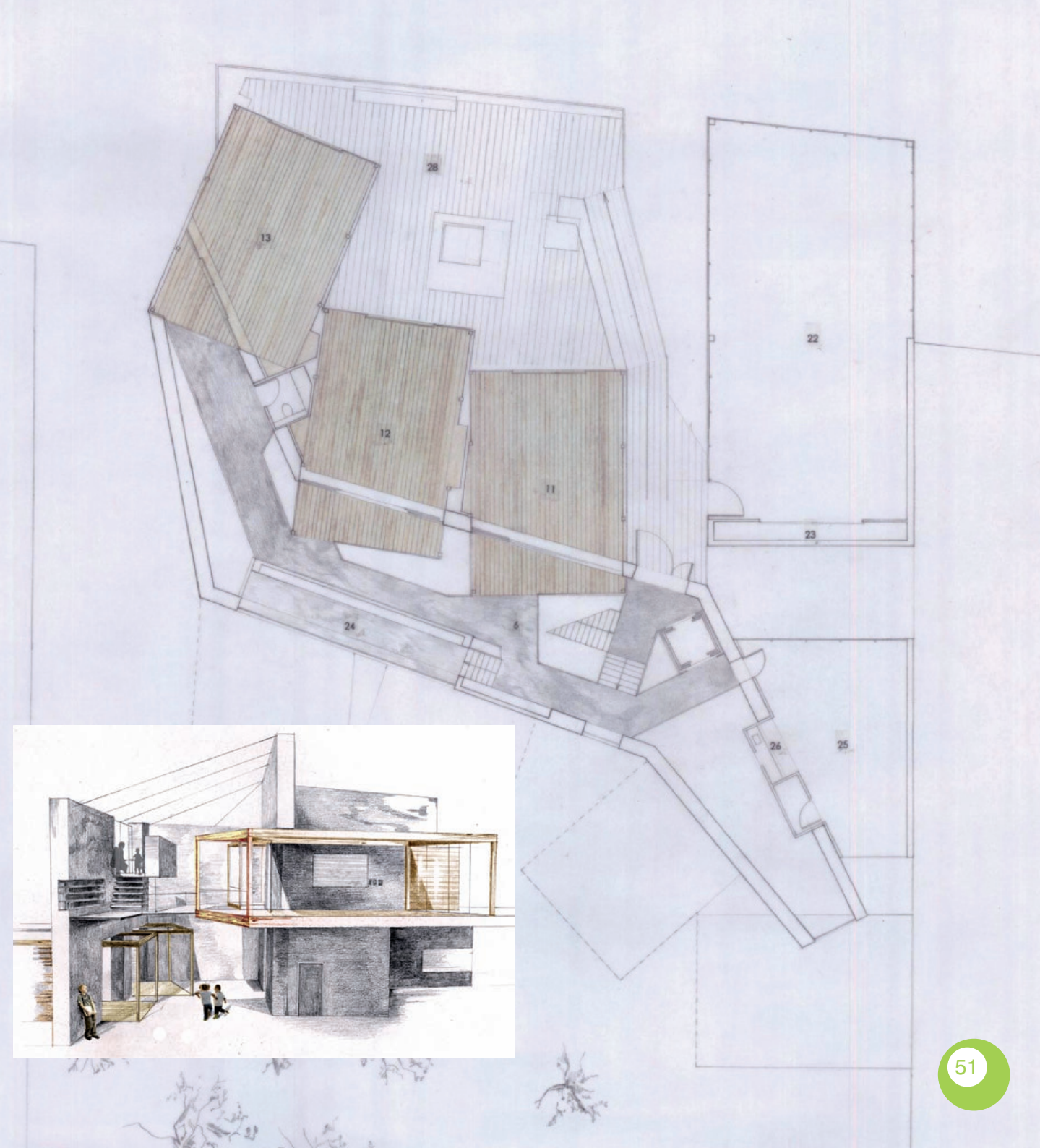
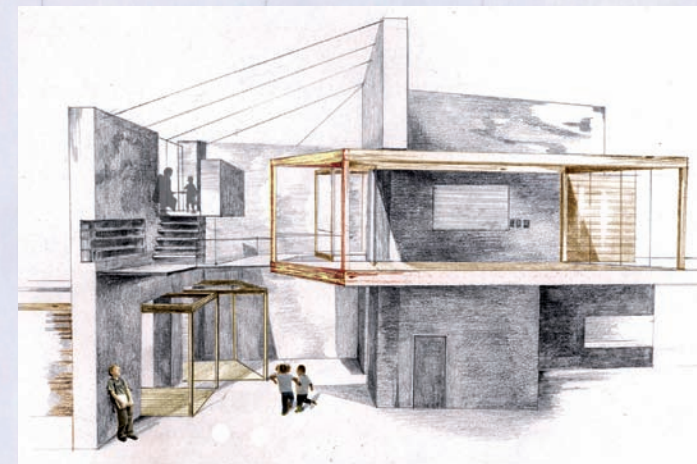




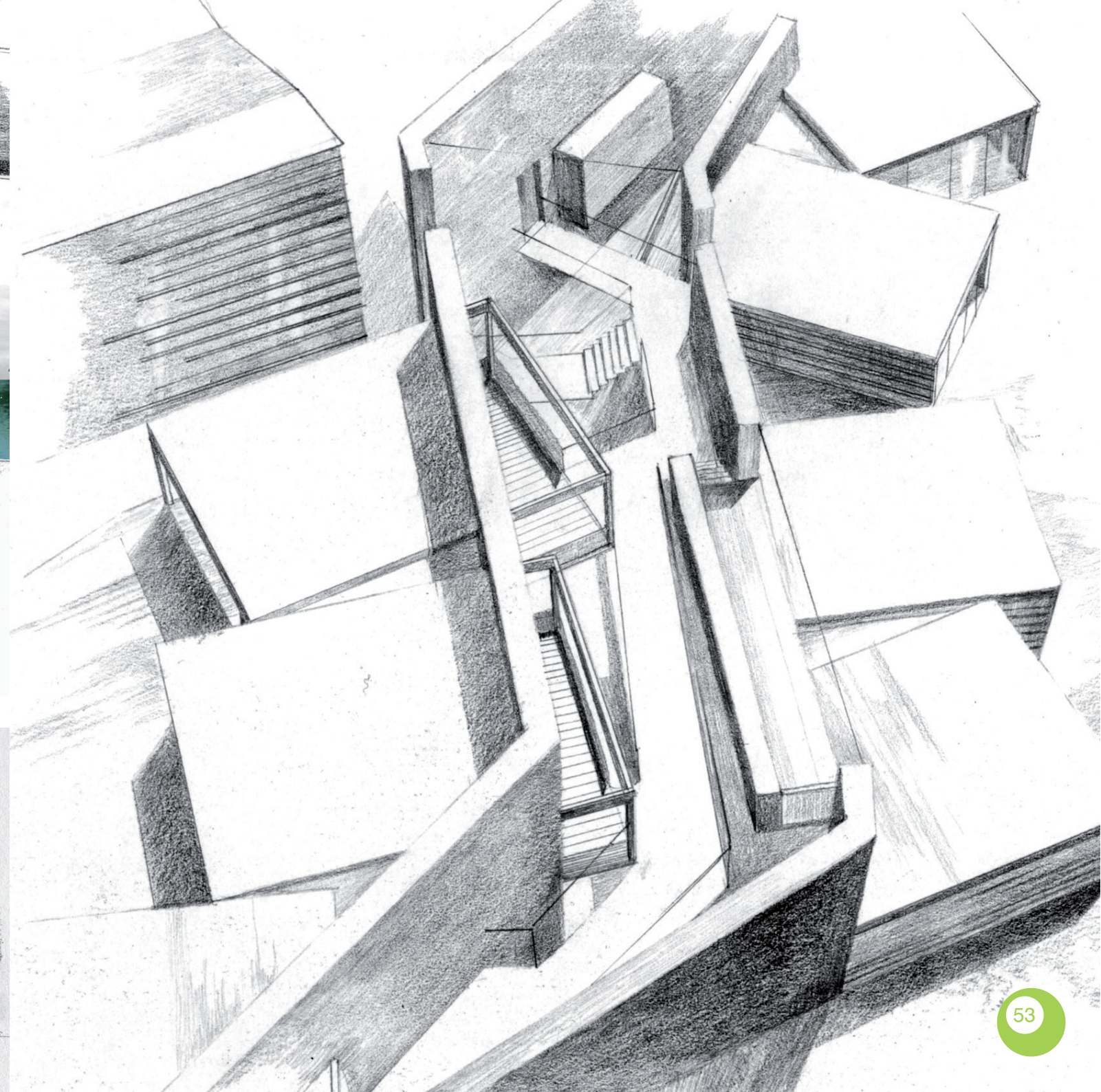
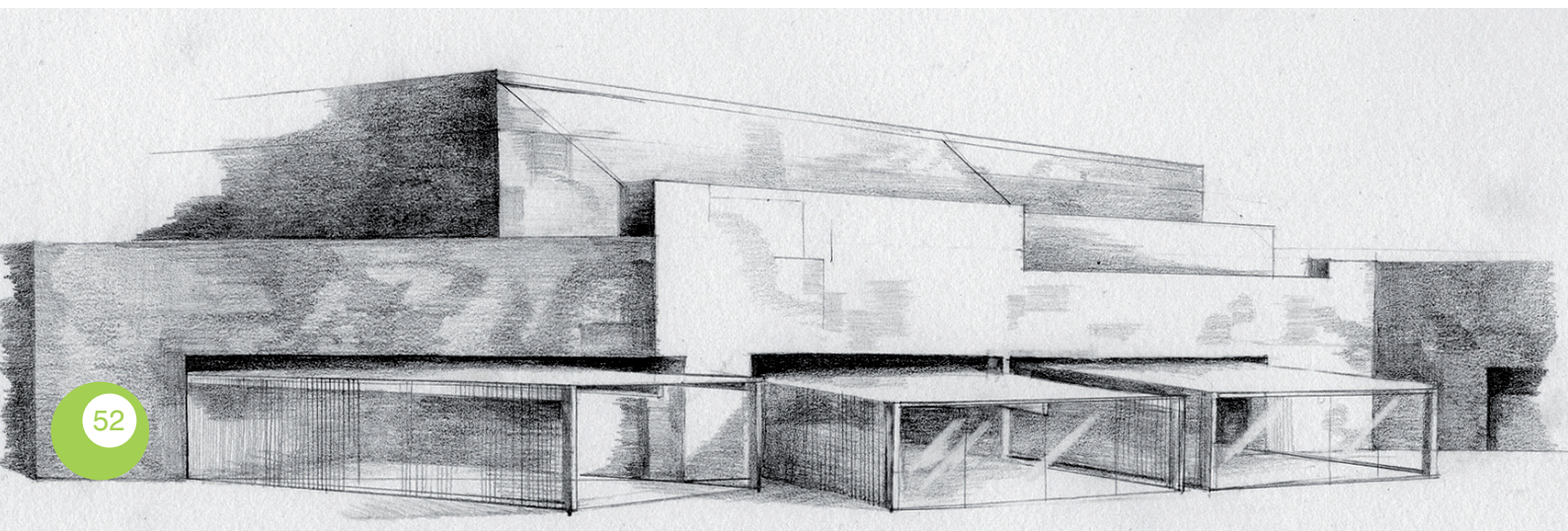
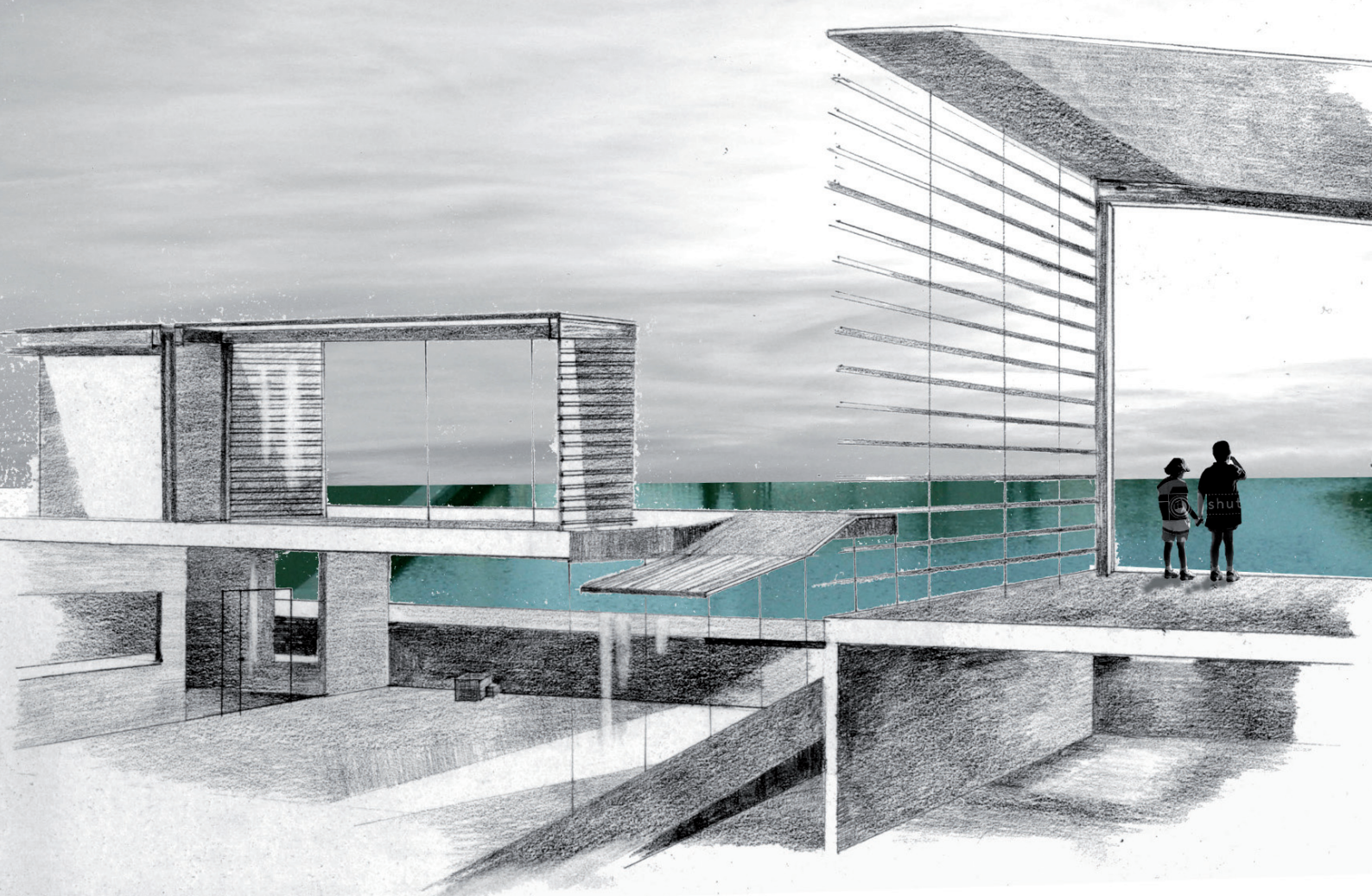
# Fiona MacDonald

## Canal Site

The primary school is here perceived as a thick, stone spine wall. Its bisection of the site creates two exterior spaces, an upper deck for the older children and a lower garden for the younger ones. The lower school classrooms are shielded by the thickness of the spine wall and open out to the lower south facing garden. The upper school classrooms break through the wall and face out to the canal and the world beyond.

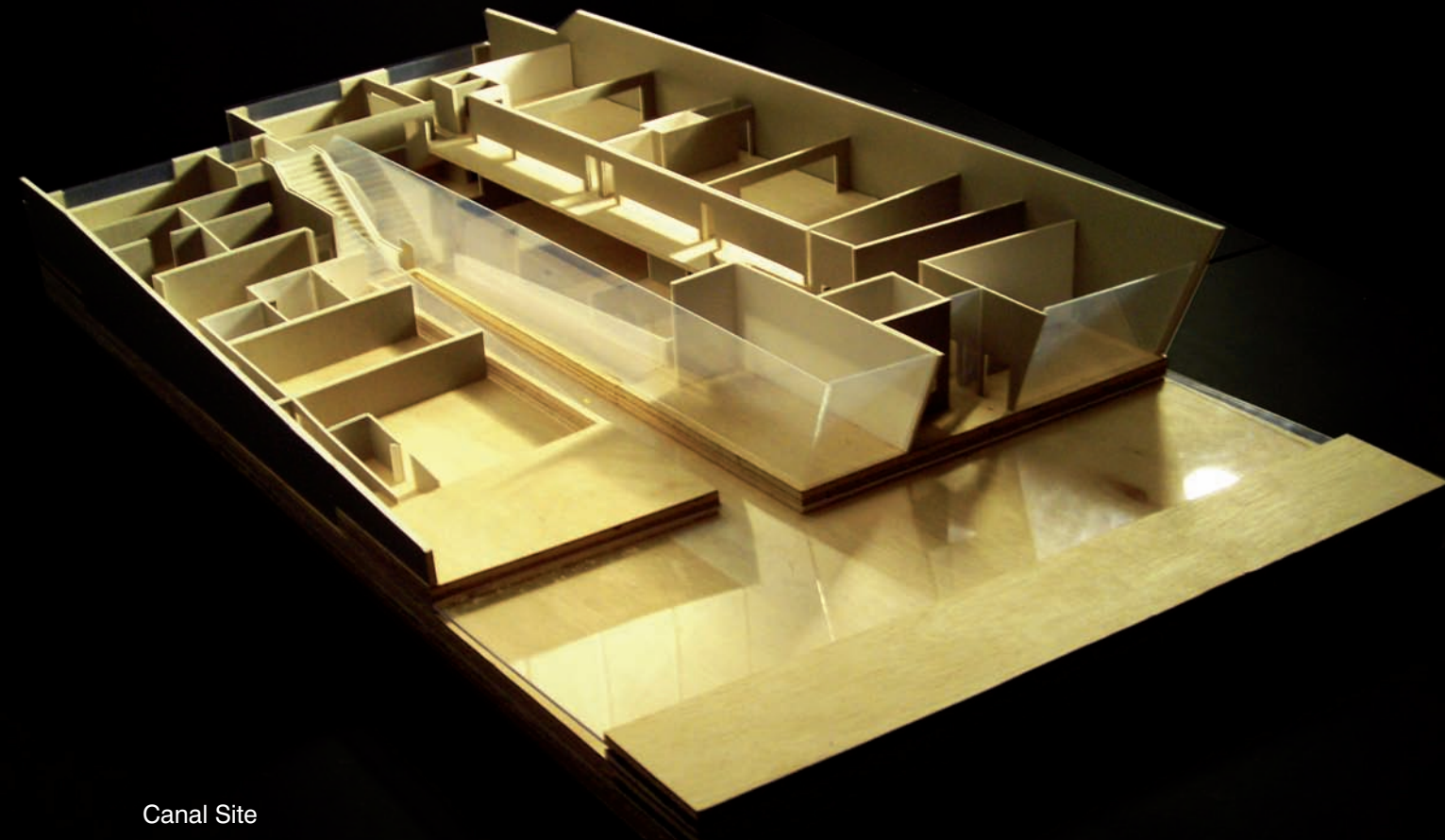






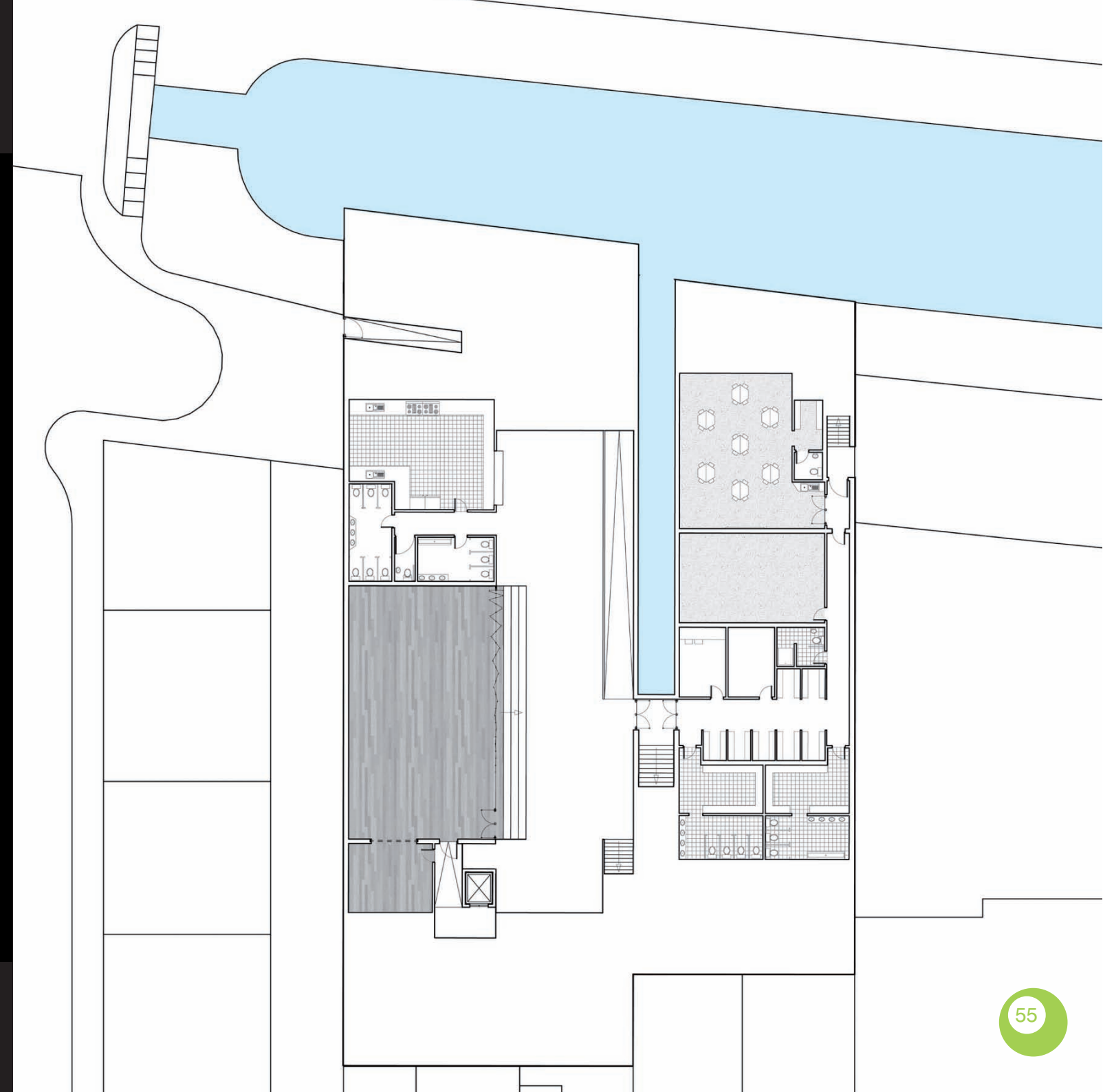


# Nicholas Lowe



## Canal Site

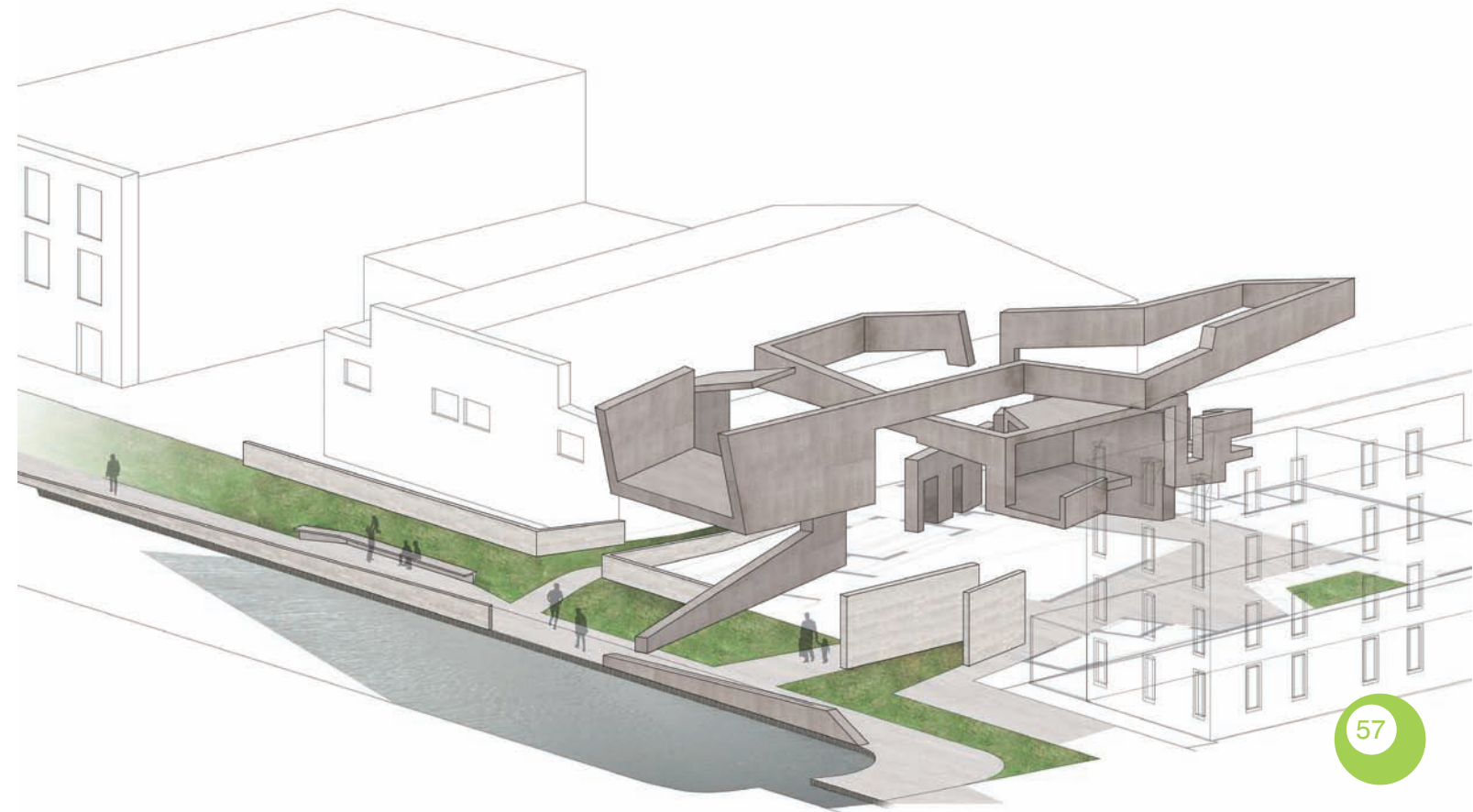
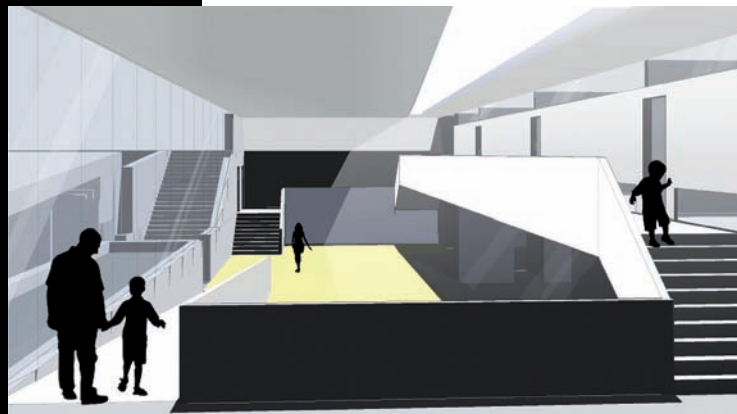
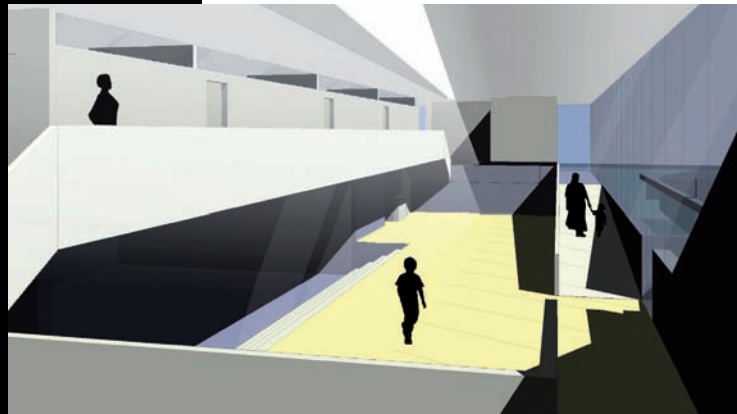
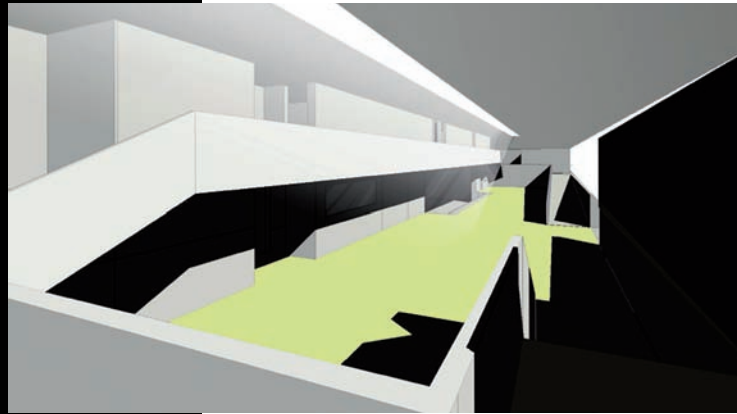
The school is designed to be an enclosure that allows the child to develop within its protective shell. The school reaches forward to the canal to engage the water and bring it within the volume of the building. This also places a physical break across the towpath giving the building a strong presence to the community surrounding it. Internally the classrooms and social spaces open to one another and create a child's world within the walls of the school.



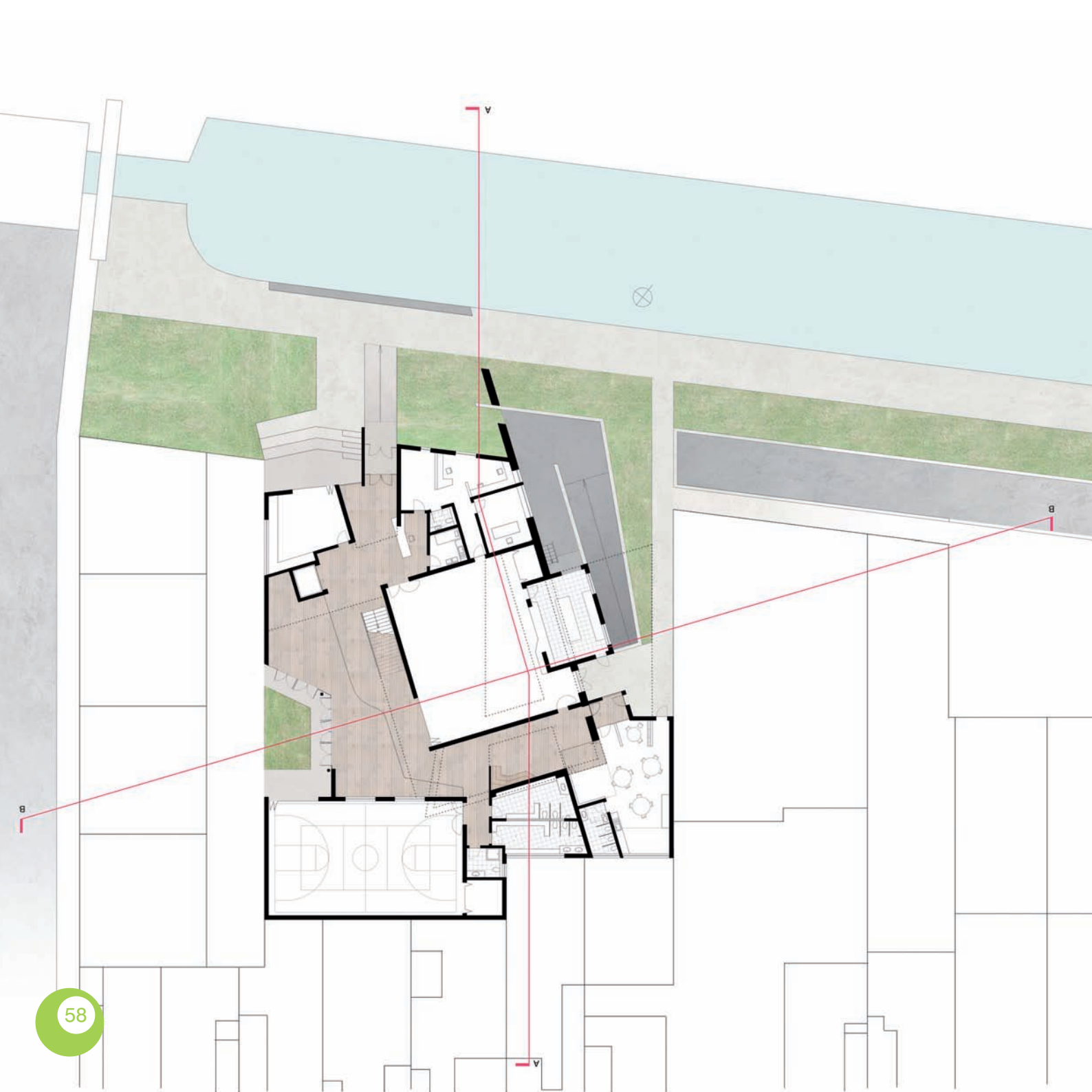
# Stuart Franks

## Canal Site

Through the initial studies of the site and educational literature, a need for the school to provide both security and openness was identified. Security for the children to develop, and openness in order to involve the local community within the life of the school. The notion of a folding wall acting as the core to the building was explored. The wall can enclose, reveal and guide the users of the building. It can also accentuate the juxtaposition of certain spaces to one another creating a richness of experience.

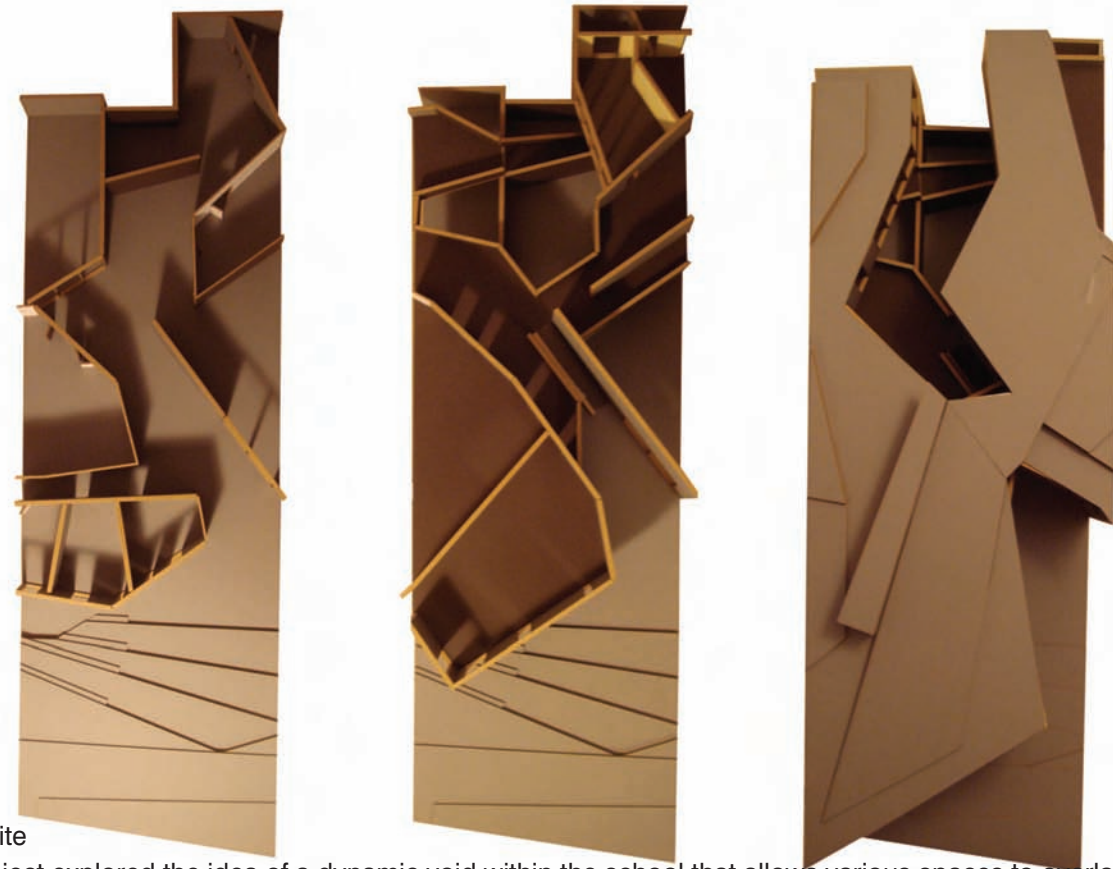






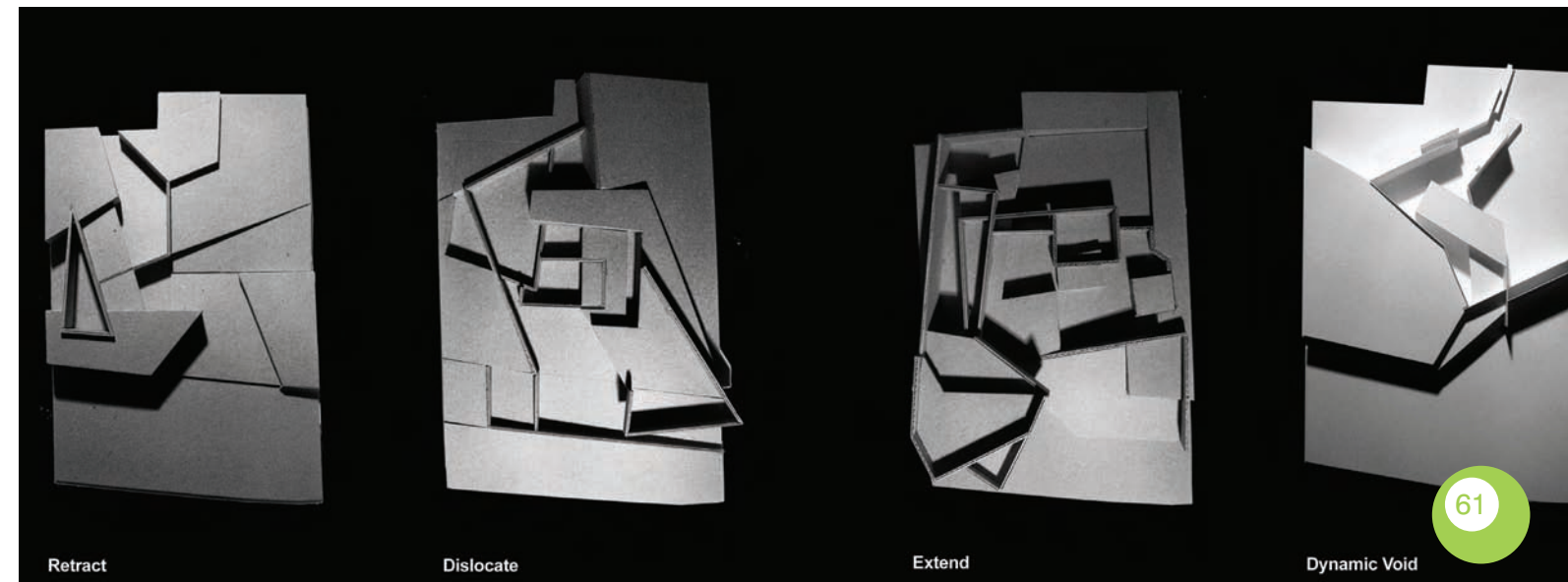
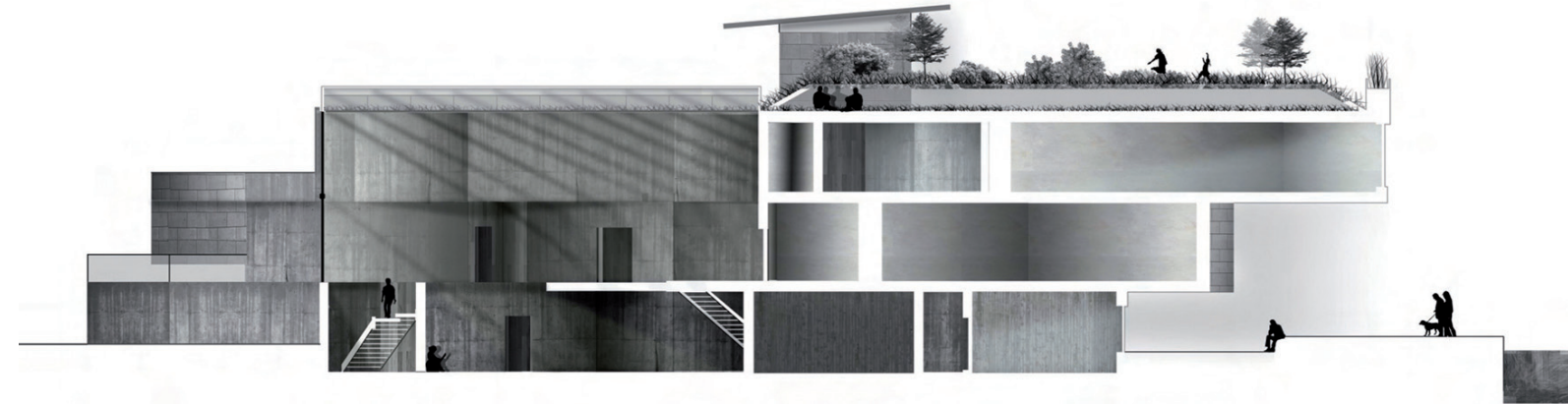


# Nicholas Kehagias



## Canal Site

This project explored the idea of a dynamic void within the school that allows various spaces to overlap in plan and section to create thresholds between the classrooms and the more public areas of the building. The importance of the environment and community was also brought to the fore by connecting the building into the landscaping of the neighbourhood and creating a 'garden in the sky' atop the main building.



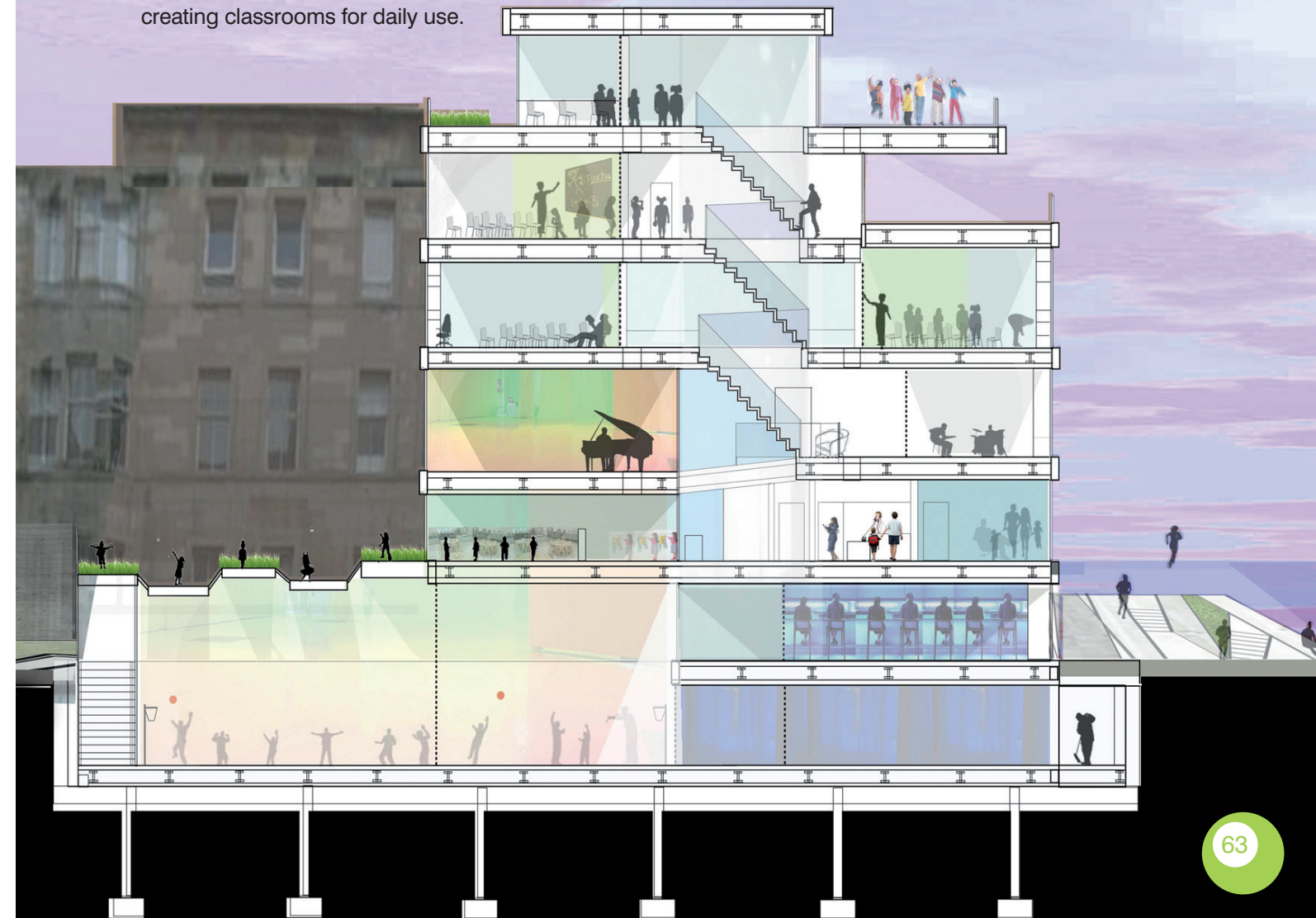




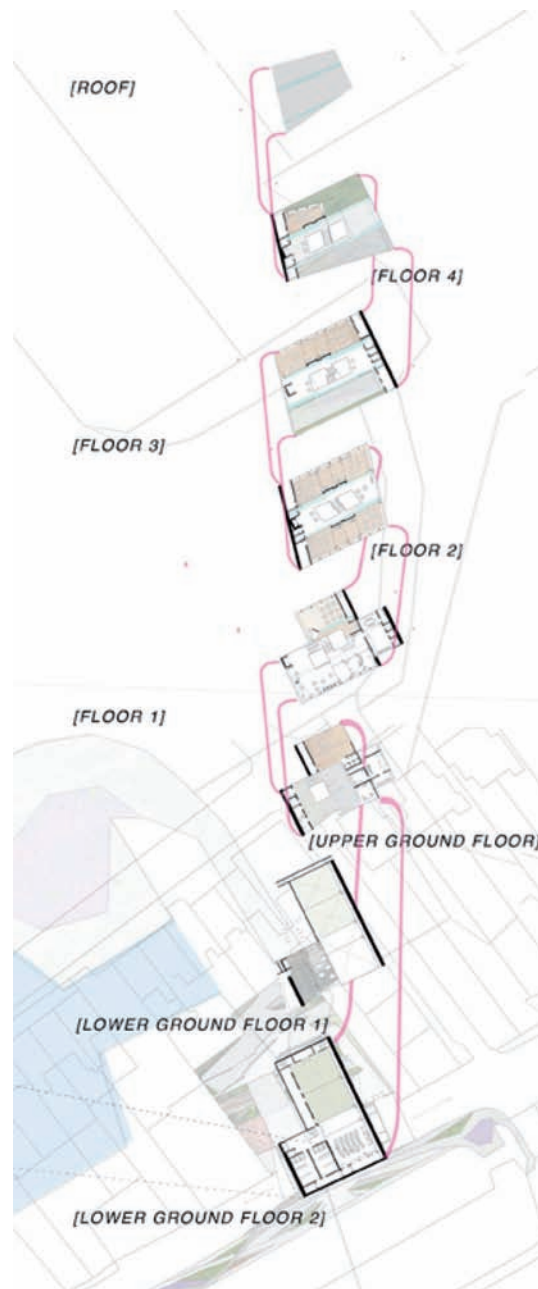
# Harriet Brisley

## Canal Site

This school was conceived as being as much for the public as the pupils. The school is to be a beacon for the new community. A ribbon of the site's ground plane is peeled, folded and cut to form the fabric of the building. By cutting the ribbon to maximise the size and flexibility of the space on the lower floors it allows the community to use the building for sport, theatre, events. The ribbon becomes more regular on the upper floors creating classrooms for daily use.







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<sup>1</sup> Fischer, Ken, “NE(X)T GEN LEARNING ENVIRONMENTS” taken from Scottish Government website <http://www.scotland.gov.uk/Publications/2007/12/14115428/6>

<sup>2</sup> Fraser, Malcolm, Architects Journal, page 21, 12<sup>th</sup> March 2009 number 9 Volume 229.

<sup>3</sup> This initial process was introduced by a former colleague, Dr Raman, when a version of the course was first run in the mid1990s.

<sup>4</sup> Gaarder, Jostein “Sophie’s World” Phoenix: London 1995 pp88-96

<sup>5</sup> Curriculum for Excellence – Scottish Executive Edinburgh 2004

<sup>6</sup> ibid page 7

<sup>7</sup> ibid page 3

<sup>8</sup> Curriculum for Excellence - Scottish Executive Edinburgh 2004

<sup>9</sup> Curriculum for Excellence - Scottish Executive Edinburgh 2004 Page 11

<sup>10</sup> ibid page 4

<sup>11</sup> Standard Attainment Tests (SATs) test student performance in each subject at the end of Key Stages as set by the National Curriculum (England). Scotland abandoned national testing of every pupil, and the resultant league tables, as part of the education review in 2003. The Scottish education minister, Peter Peacock, said the country’s executive wanted to create a “seamless” curriculum with the emphasis on teaching rather than testing. Under the plans, the national survey of five to 14 attainment, which tests every pupil in primary school and the first two years of secondary school, was replaced by a system sampling, which aims to track the performance of a proportion of pupils. Wales has also abandoned testing and it seems likely England will follow.

<sup>12</sup> ibid page 13

<sup>13</sup> ibid page 13

<sup>14</sup> Gordon Robertson, interviewed by the authors 1 May 2009

<sup>15</sup> The Lighthouse is Scotland’s Centre for Architecture, Design and the City.

<sup>16</sup> The document is primarily aimed at supporting the procurement programme for new schools in England and Wales – “Building School for the Future”.

<sup>17</sup> Royal Incorporation of Architects in Scotland (RIAS) (2002)

<sup>18</sup> A+DS is an advisory Non Departmental Public Body (NDPB) and operates as a company limited by guarantee funded directly by the Scottish Government. A+DS acts as a key delivery mechanism for the objectives of the Scottish Government’s Policy on Architecture for Scotland.

<sup>19</sup> The Scottish Architecture Policy was published in 2001 and was reviewed in “Building our Legacy” (2007)

<sup>20</sup> The title is taken from Christopher Alexander’s “A Pattern Language” (1977)

<sup>21</sup> Refer to Sam Cassels article [http://www.oecd.org/document/10/0,3343,en\\_2649\\_35961311\\_42123722\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/10/0,3343,en_2649_35961311_42123722_1_1_1_1,00.html)

<sup>22</sup> Alexander Christopher Page 669 A Pattern Language Oxford University Press

<sup>23</sup> Foote and Cottrell (1955) Identity and Interpersonal Competance Chicago pp 72-3. 79 as quoted in Alexander, c(1977) A pattern language: towns, buildings, construction p669.

<sup>24</sup> Peter Clegg Architecture Today 194

<sup>25</sup> Alexander Christopher A Pattern Language, page 877

<sup>26</sup> Alexander Christopher A Pattern Language, page 549

<sup>27</sup> ibid page 610

<sup>28</sup> ibid page 615

<sup>29</sup> ibid page 690 <http://www.uniform-studio.com/womenscollection1.html>

<sup>30</sup> Gordon Roberston, Interview 1 May 2009

<sup>31</sup> Alexander Christopher A Pattern Language, page 765

